PROGRAMMER ANALYST TRAINEE IN ARTIFICIAL INTELLIGENCE APPLICATIONS

Internship report submitted in partial fulfilment of the requirement for the degree of Bachelor of Technology

in

Computer Science and Engineering

By

Pranika Agarwal (181349)

Under the supervision of

Dr. Monika Bharti

to

Department of Computer Science & Engineering and Information Technology
Jaypee University of Information Technology Waknaghat, Solan-173234, Himachal Pradesh

CERTIFICATE

This is to certify that the work which is being presented in the project report titled "PROGRAMMER ANALYST TRAINEE IN ARTIFICIAL INTELLIGENCE APPLICATIONS" in partial fulfilment of the requirements for the award of the degree of Bachelor of Technology in Computer Science And Engineering and submitted to the Department of Computer Science & Engineering and Information Technology, Jaypee University of Information Technology, Waknaghat is an authentic record of work carried out by Pranika Agarwal (181349) during the period from February 2022 to May 2022 under the supervision of Dr. Monika Bharti, Department of Computer Science and Engineering, Jaypee University of Information Technology, Waknaghat.

Pranika

Pranika Agarwal, 181349

This is to certify that the above statement made by the candidate is true to the best of my knowledge.

Monika Bharti

Supervisor Name: Dr. Monika Bharti
Designation: Associate Professor
Department name: Computer Science
Dated: 25 May 2022

CANDIDATE’S DECLARATION

I hereby declare that the work presented in this report titled "PROGRAMMER ANALYST TRAINEE IN ARTIFICIAL INTELLIGENCE APPLICATIONS" submitted in the department of Computer Science & Engineering and Information Technology, Jaypee University of Information Technology Waknaghat in partial fulfilment of the requirements for the award of the degree of Bachelor of Technology in Computer Science and Engineering/Information Technology is an authentic record of my own work completed between January 2022 and May 2022.

The report's content has not been submitted for consideration for any other degree or diploma.

Pranika

Pranika Agarwal, 181349

ACKNOWLEDGEMENTS

Firstly, I express my heartiest thanks and gratefulness to the almighty for his divine blessings that made it possible for me to complete the internship successfully.

This is a matter of pleasure for me to acknowledge my deep sense of gratitude to Jaypee University of Information Technology for giving me an opportunity to explore my abilities via this internship program. I would like to express my sincere gratitude to our TNP officer, Mr. Pankaj Kumar, and our faculty coordinator, Dr. Nafis U. Khan for this opportunity. I also wish to express my gratitude to my internship supervisor, for their valuable guidance and advice in completing this project.

I would like to record my sincere appreciation and gratitude towards all the officials and employees of cognizant, without whose kind assistance, my internship program would not have succeeded. The facts and other vital information provided by them have contributed towards making this report as comprehensive as possible. I am indeed thankful to them.

I would also like to thank Dr. Monika Bharti, Department of CSE and IT, for her invaluable assistance in completing my internship.

Last but not the least, I would like to express my sincere thanks to all my family members, friends and well-wishers for their immense support and best wishes throughout the internship duration and the preparation of this report.

I believe that this report will be a valuable asset not only for academic institutions, but will also be useful for all those who are interested to learn about internship experiences in auditing and consulting firms.

Pranika Agarwal (181349)

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LIST OF ABBREVIATIONS

GUI	Graphical User Interface
LED	Light Emitting Diodes
HCI	Human Computer Interaction
MHI	Motion History Images
IDE	Integrated Development Environment
OpenCV	Open Source Computer Vision
HSV	Hue, Saturation, and Values
RGB	Red, Green, and Blue
XML	Extensible Markup Language

ABSTRACT

I was selected as a GENC intern at Cognizant Technology Solution India Pvt. Ltd. At the GENC program in Cognizant, we are divided into certain domains. Each domain has a specific amount of training period varying from 12 weeks to 19 weeks. My domain was Artificial Intelligence Applications Basics (AIA Basics). My internship lasted approximately 12 weeks.

The internship included various events such as educational workshops, webinars, Udemy courses, and group work assignments. It also included behavioural training. This helped us become familiar with professional behaviour and ettiquttes. We also had to give assessments and attend mock interviews to test ourselves. They also provided us with extensive feedback and follow-ups so that we could improve our abilities further.

A large IT company based in the United States of America, Cognizant employed a large number of Indians last year, and it now employs about 3 lakh employees. The Cognizant Corporation also recruits and hires international workers from all around the globe.

Cognizant provides various services to a large number of clients in the IT industry; they also have ties with one of the fastest growing companies. Work culture is just as professional as expected.

CHAPTER -1
INTRODUCTION

1.1 Introduction

After the end of 7th semester, various companies visited our university for placement of the students. One such company was Cognizant Technology Solution India Pvt. Ltd. Due to my good fortune, I was selected for the GENC profile. After being selected as a GENC, I was offered an internship program by the firm. I had to complete this internship successfully to score a conversion to a full time role; completing internship is necessary for the full time role in Cognizant. The internship was of approximately 12 weeks containing various sessions, webinar, online Udemy courses, assessments and projects.

Cognizant is one of the top IT companies in India, and a major IT company in the United States of America. Cognizant employees are around 3 lakhs in number and recruit around 20 thousand fresh people every year from India. Cognizant also hires from different countries across the globe.

Cognizant offers various roles in the company like developer, designer, tester and manager in the company. However, before becoming an associate, every person should complete the intern period. After the internship period, there is one year of probation period in the company for the associate to join the company.

Cognizant also provides stipend during the internship period which is around 12000/month to the interns pursuing internship.

But the total amount that comes in a person's hand is 10800 because 1200 get cuts for the purpose related to the tax.

The internship period varies and depends on the roles, which the intern gets, like someone who got developer profile, for them internship period will be of around 4-5 months and for the quality insurance, it might vary from 5-6 month.

The domain allocation is random in the cognizant for the interns, but sometimes it depends on the assimilation test also, the person who got higher marks in the assimilation test, will have higher chances to get a better profile or domain and it also depends on the first come first serve basis.

1.2 Mission and Vision

1.2.1 Mission

Cognizant's single-minded mission is to dedicate their business process and technology innovation know-how, deep industry expertise and worldwide resources to working together with clients to make their businesses stronger.

Cognizant says:

“ At Cognizant, we are a high-performing team with heart.

Our diverse community of 300,000+ people are working together to help transform the companies the world relies on. And when we’re not developing game-changing digital solutions for clients, we’re improving lives elsewhere by volunteering in local communities, fostering inclusion through our employee affinity groups and so much more.

Our team is as high-calibre as it is humble, caring and supportive of one another. We believe that continuous improvement is the catalyst for growth and innovation, and we offer the flexibility, support and opportunities all levels of associates need to take their lives and careers to new places.

Every day, all around the world, our people engineer impact—with their clients, communities, colleagues and their own lives. ”

1.2.2 Vision

They engineer modern businesses to improve everyday life.

Every choice they make aligns to their vision: to become the pre-eminent technology services partner to the world’s top companies.

1.3 Values

The values of the organisation are as follows:

- Valuing People

  They believe that our success depends first and foremost on people. By respecting people in everything they do, they will develop and maintain high quality, mutually beneficial relationships with our clients, professional colleagues, referral sources, vendors, community members and each other.

- Building Client Relationships

  They seek to earn long-term client loyalty by developing a deep understanding of each client's business and personal goals, by demonstrating unwavering reliability and integrity in their work and by acting as an independent and objective advisor to their clients.

- Upholding Quality and Integrity

  They will maintain an environment where a commitment to quality, honesty, respect, fairness and professional ethics governs the actions and decisions of everyone within their firm.

The keys to success that the firm believes in are as follows:

- Complete the work with full honesty.
- Complete the work on time.
- Complete the assessment.
- Complete the project within scheduled time.
- Try to learn as much as possible from the SME, Trainer, mentor.
- Open to learn anything taught.

Some other values that Cognizant believes in are:

- Passion.
- Starting with a point of view.
- Transparency.
- Do the right thing, the right way.

1.4 Objectives

The objectives of Cognizant are:

- The overall objective is to focus on the activities towards its specialised services and to become a leader in this niche in the country.
- Growth

  To expand the business at a rate that is both challenging and manageable, serving the market with innovation and adaptability.

1.5 Organisation

At Cognizant, they are working every day to create conditions for everyone to thrive. It's a commitment that extends far beyond their own workplaces. When all of them show up as inclusive leaders—deeply aware of and empathetic to others, with the courage to harness the power of diversity in everything they do - they elevate their work and create a powerful ripple effect on their teams, clients, and communities.

Cognizant is a company with immense reach across industries and geographies. They aspire to:

- Hold themselves accountable. They call out instances of bias when they see them, change ways of working that aren't inclusive or equitable, and model inclusive behaviours in their everyday work.
- Be courageous. They aim to lead and not follow. They set aspirations and are transparent about their progress against them. They lean into tough topics and bold solutions.
- Continually learn and adapt. They partner with others to open their minds, expand their understanding and accelerate their path to a more inclusive Cognizant. They embrace best practices from organisations that are leading the way.
- Create change within and beyond Cognizant. Their role in creating a more inclusive world extends to their associates, clients and communities.

CHAPTER 2
LITERATURE REVIEW

We referred to many research papers, journals and websites during the internship. They are listed here.

2.1 MySQL Documentation

Publication: MySQL (Oracle Corporation)

MySQL is a SQL (Structured Query Language) database server that is exceptionally fast, multithreaded, multi-user, and robust. MySQL Server is designed for mission-critical, high-volume production applications as well as integration with widely distributed software. Oracle Corporation and/or its affiliates own the trademark Oracle. MySQL is a registered trademark of Oracle Corporation and/or its affiliates, and customers may not use it without Oracle's prior written permission. Other names could be trademarks belonging to their respective owners.

2.2 SQL: From Traditional Databases to Big Data

Publication: By Asin N. Silva (Arizona State University), Isadora Almeida (Arizona State University), Michell Queiroz (Arizona State University) in February 2016.

The Structured Query Language (SQL) is the most widely used programming language for managing data in database systems. SQL was originally solely used with relational database management systems (RDBMS), but with the introduction of various types of database systems, its use has grown substantially.

SQL has been discovered to be a powerful query language in highly distributed and scalable systems processing Big Data, i.e. datasets with great volume, velocity, and variety. Despite the fact that traditional relational databases account for only a small portion of the database systems landscape, most SQL courses focus solely on its application in traditional relational systems.

They propose in this study that SQL be taught as a general language that can be utilised in a variety of database systems, from typical RDBMSs to Big Data systems. This document provides well-structured suggestions for introducing SQL in new database systems such as MapReduce, NoSQL, and NewSQL. This paper makes a significant addition by describing a variety of course materials, including virtual machines, example projects, and in-class exercises, that allow students to gain hands-on experience with SQL across a wide range of modern database systems.

2.3 A Complete Reference for Informatica PowerCenter ETL Tool

By Abhishek Gupta (Associate Project, Cognizant Technology Solutions Pvt. Ltd, Chennai, Tamil Nadu, India)

Publication: International Journal of Trend in Scientific Research and Development (IJTSRD), Volume 3, Issue 2, in February 2021

Today, we live in the world of data science, where we must manage large amounts of data in order to run any business. Any organisation's aim must be achieved by making the appropriate decision at the right moment. The data is kept in the form of data warehousing, and the company uses the informatics power centre tool to extract, convert, and load it. As a result, we have provided the whole informatics power centre logics in this paper, which will be valuable not only for organisations, but also for data scientists as a comprehensive reference.

2.4 Informatica PowerCenter 10.4.0 Designer Guide

Publication: 02 July 2020 by Informatica Inc.

Informatica PowerCenter Designer is a graphical user interface that allows you to create and manage PowerCenter objects such as sources, targets, Mapplets, Mappings, and transformations. It offers a collection of tools called "Mapping" that are used to create ETL applications.

Source analyzer imports source tables, target designer imports target tables from databases, and transformation is used to construct mapping in PowerCenter Designer.

2.5 Informatica PowerCenter 10.4.0 Developer Tool Guide

Publication: 12 December 2019 by Informatica Inc.

You can use the Developer tool to create and build data integration, data quality, data profiling, and data services solutions.
The Developer tool can be used to import metadata, establish connections, and build data objects. The Developer tool can also be used to design and run profiles, mappings, and workflows.

2.6 Informatica PowerCenter 10.4.0 Repository Guide

Publication: 12 December 2019 by Informatica Inc.

The Repository Service manages the PowerCenter repository, which is a relational database. The metadata is stored in database tables in the repository. Metadata refers to several types of items that you can create or change with the PowerCenter Client tools, such as mappings and transformations. The Integration Service extracts, transforms, and loads data using repository objects. Users' permissions, for example, are likewise stored in the repository.

2.7 Informatica PowerCenter 10.4.0 Workflow Basics Guide

Publication: 25 June 2020 by Informatica Inc.

You create a workflow in the Workflow Manager to execute mappings you create in the Designer by defining a collection of instructions called a workflow. In general, a workflow consists of a session and any additional tasks you would wish to complete when running a session. A session, an email notification, or scheduling information are examples of tasks. Each task is linked to other tasks in the workflow.
In the Workflow Manager, you can also build a worklet. A worklet is a container for a bunch of tasks. A worklet is similar to a workflow, however it does not include any scheduling information. Within a workflow, you can run a batch of worklets.
You execute a workflow in the Workflow Manager and monitor it in the Workflow Monitor after you've created it.

2.8 Informatica PowerCenter 10.4.0 User Guide

Publication: 18 March 2021 by Informatica Inc.

To manage non production data in a company, Test Data Management (TDM) interfaces with PowerCenter, PowerExchange®, and Informatica applications. TDM allows a company to make a smaller copy of production data while masking important information. The sensitive columns in the test data can be discovered and disguised in the test data by an organisation. An organisation can also develop test data that is separate from the production database and does not contain sensitive information. They can build up a test data warehouse to save test data in one place and change or reset the data as needed.

In Test Data Manager, you can manage data discovery, data subsets, data masking, and data production.

2.9 Conclusion

Many application scenarios necessitate the processing of very big datasets in a highly scalable and distributed manner, and various Big Data systems have been developed to meet this need. The advantages of SQL as a query language have been recognised by several of these systems. The majority of database courses, on the other hand, concentrate primarily on classic relational databases. These studies show that SQL should be taught with the new and broader database ecosystem in mind. Students will be able to have a better understanding of data from a larger range of systems and applications as a result of this exposure. This paper offers a set of rules as well as a variety of class resources for integrating SQL with three major types of Big Data systems: MapReduce, NoSQL, and NewSQL.

The Informatica PowerCenter is a robust solution for data integration and the creation of data warehouses for many businesses. The technology saves time by transforming data quickly and delivering it to industries, allowing a data warehouse to be built and used in projects.

CHAPTER 3
INTERNSHIP TASK SEQUENCE

3.1 Introduction

Our internship included many tasks, assignments, assessments and projects. This chapter tells you about it in detail. We were trained in various softwares. We had to complete assignments and hands-on activities thereafter. Finally, we had to attend assessments and interviews to pass the training of a particular software. We had to score more than 70% to successfully complete the training and internship.

3.2 Databases and SQL

During the internship, we were required to take Udemy courses given by the cognizant, as well as hands-ons, assessments, and the integrated capabilities test. With the help of MySQL and MySQL queries, we studied the database aspect from the ground up.

We gave an assessment, a small test whose marks were taken into account, for the calculation of the final overall performance, after we completed the online Udemy courses. Completing the hands-ons is mandatory for every intern, and after we completed the hands-ons, we used to give an assessment, a small test whose marks were taken into account, for the calculation of the final overall performance.

Because understanding MySQL and queries is very crucial in databases, the most significant element of this week was covering all of the basic aspects of the database and studying MySQL and queries and databases from the start.

We had to complete multiple assignments. The assignments were complex and hence, we practised on a guide first.

3.2.1 Guided Practice

The guided practice dealt with data definition language (DDL), data manipulation language (DML), data query language (DQL), data control language(DCL) and transaction control language (TCL).

3.2.2 DDL and DML

Scenario: ABC College wants to develop a University Management System (UMS) to store information on students who join their college. The database should contain:

- Student’s personal information as well as student’s academic details.
- It should store information on subjects taught at the university in various departments.
- It should also store marks obtained by each student in each semester subject wise as well as the GPA for each semester.

GPA is a ten-point scale that takes into account individual topic grades as well as subject weightage percent in a semester.

Now it's time to create the necessary table structure, however the client has stipulated that all queries must be made in ANSI SQL syntax exclusively.

Exercise 1: Understand how to create Tables

Problem Statement:

Identify the tables and columns required for the University Management System using the following. Registration number, name, branch, contact, DOB, date of joining, address, and email ID should all be included in the student information. For computing GPA, information on subjects such as subject code, subject name, and weightage is required. Semester-by-semester average of a student's grades in each course. Finally, the student's overall performance, which includes GPA for a semester and scholarship eligibility.

Using the example above, associates should identify the tables and columns needed to develop the UMS system.

IMPORTANT NOTE: The number of subjects offered fluctuates from semester to semester, and the university may vary the number of subjects offered or swap subjects within a semester. The database table design should be such that any new topic additions or subject removals have no effect on the database design, which means I shouldn't add columns or change tables. Changes should be able to be accommodated by the design.

Exercise 2: Use appropriate DDL and DML statements

Problem Statement:

Problem 1 Creating Tables: Create following tables using My SQL Client and DDL.

- Create Student_Info_<employee_id> table – This table is used for storing the student's personal information.

- Reg_Number – Varchar
- Student_Name - Varchar(30)
- Branch – Varchar
- Contact_Number – Varchar
- Date_of_Birth-Date,
- Date_of_Joining-Date
- Address-Varchar(250)
- Email_id-Varchar(250)
- Create Subject_Master_<employee_id> table – This table is used for storing the subjects' information which are delivered in the university.
- Subject_Code--varchar2(10)
- Subject_Name- Varchar,
- Weightage- Number(3),
- Create Student_Marks_<employee_id>table -- This table holds the marks obtained by a student in a particular subject in a semester. The marks are stored as records in this table. For example if a student S1 scores 50% in networks and 70% in microprocessor in semester 4.

Any new subject addition does not need a change in table design; all it needs is a new subject code and a new row in this table.

- Reg_Number - Varchar
- Subject_Code - varchar2(10)
- Semester-Number(3)
- Marks-Number (3)
- Create Student_Result_<employee_id> table -- For storing the student results.
- Reg_Number-Varchar
- Semester-Number(3)
- GPA-Number (5,3)
- Is_Eligible_Scholarship char(3)

Deliverables Expected:

All Tables creation as per details mentioned above.

Exercise 3: Loading tables using DML:

NOTE: Use the data mentioned in Appendix1 section to load the tables.

- Load student information into the Student_Info table.
- Load information on subjects into the Subject_Master table.
- Load marks obtained by students in each subject in each semester into the Student_Marks table.
- Load the GPA of the student obtained in each semester into the Student_Result table along with the information whether the student is eligible for scholarship or not.

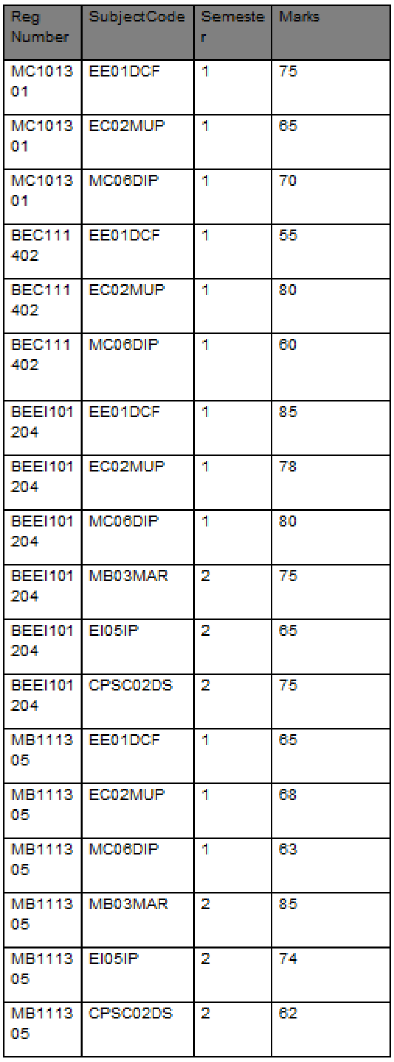
Deliverables Expected:

All Tables creation as per details mentioned above.

Student_Marks_<employee_id>: The marks need to be loaded as follows.

In the subject master tables, pupils James and Manio records must be inserted for semester 1 for the first three subjects.

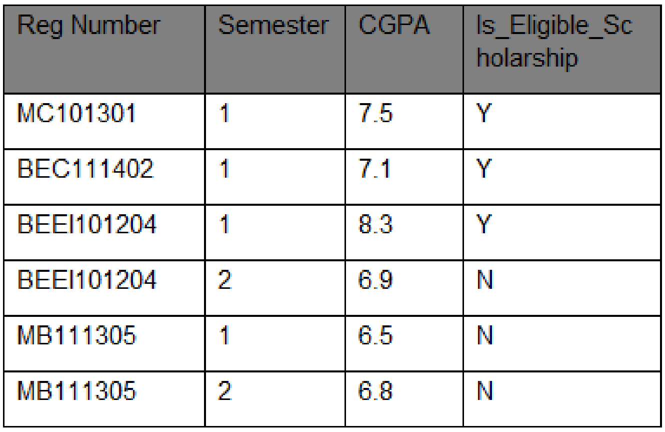
The marks for all subjects for all semesters must be entered for the remaining pupils.



Reg Number	SubjectCode	Semester	Marks
MC101301	EE01DCF	1	75
MC101301	EC02MUP	1	65
MC101301	MC06DIP	1	70
BEC111402	EE01DCF	1	55
BEC111402	EC02MUP	1	80
BEC111402	MC06DIP	1	60
BEEI101204	EE01DCF	1	85
BEEI101204	EC02MUP	1	78
BEEI101204	MC06DIP	1	80
BEEI101204	MB03MAR	2	75
BEEI101204	EI05IP	2	65
BEEI101204	CPSC02DS	2	75
MB111305	EE01DCF	1	65
MB111305	EC02MUP	1	68
MB111305	MC06DIP	1	63
MB111305	MB03MAR	2	85
MB111305	EI05IP	2	74
MB111305	CPSC02DS	2	62

Table 1.0

Student_Results_<employee_id>: The 5 student results need to be calculated for the semester and stored. For data per se load the table with some arbitrary GPA.



Reg Number	Semester	CGPA	Is_Eligible_Scholarship
MC101301	1	7.5	Y
BEC111402	1	7.1	Y
BEEI101204	1	8.3	Y
BEEI101204	2	6.9	N
MB111305	1	6.5	N
MB111305	2	6.8	N

Table 2.0

3.2.3 Constraints

Exercise 1:

Create a table named “COURSE_INFO” & “Student_Info” with following column name, data type, data size, and following constraints:

- COURSE_CODE – PRIMARY KEY
- COURSE_NAME – NOT NULL.
- STUDENT_ID –PRIMARY KEY
- COURSE_CODE , varchar, 10
- COURSE_NAME, varchar, 20
- COURSE_DESCRIPTION, varchar, 25
- COURSE_START_DATE, Date
- COURSE_DURATION, int
- NO_OF_PARTICIPANTS, int
- COURSE_TYPE, Char(3)
- STUDENT_ID, varchar, 10
- FIRST_NAME, varchar, 20
- LAST_NAME, varchar, 25
- ADDRESS, varchar, 150

Exercise 2:

Create a table named Student_Courses with the following FOREIGN KEY:

- Student_Id – FOREIGN KEY referencing Student_Info table's Student_id column.
- Course Code - FOREIGN KEY referencing Course_Info table's Course_Code column student Courses
- STUDENT_ID, varchar, 10
- COURSE_CODE, varchar, 20

Exercise 3:

Create a table for the CMS application where the course fees are maintained.

- Create a table Course_Fees with the following columns and CHECK constraints
- Add the following constraints:
- Course_Code - FOREIGN KEY referencing Course_Info tables Course_Code column.
- Base_Fees should be greater than 15000
- Base_Fees should be greater than Special_Fees.
- Discount should be between 5 and 15 %.

3.2.4 Operators

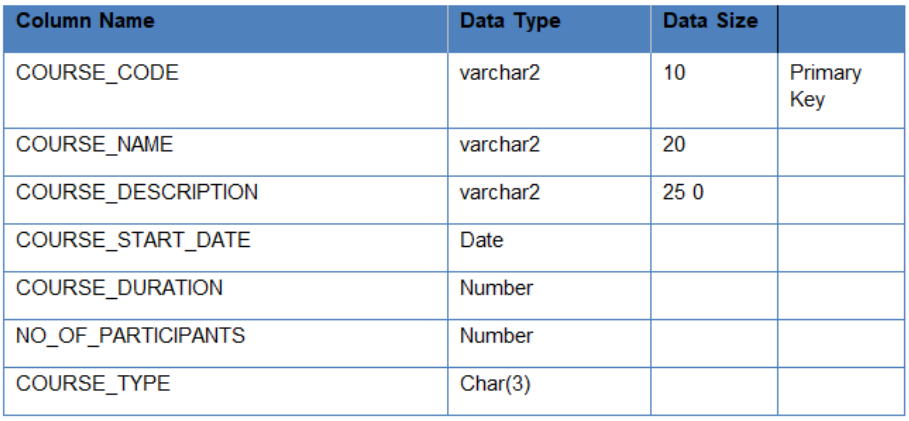
- Prerequisite 1

  Associates should ensure that the tables specified in the document are available in the MySQL database, with each table followed by the employee ID.

- Prerequisite 2

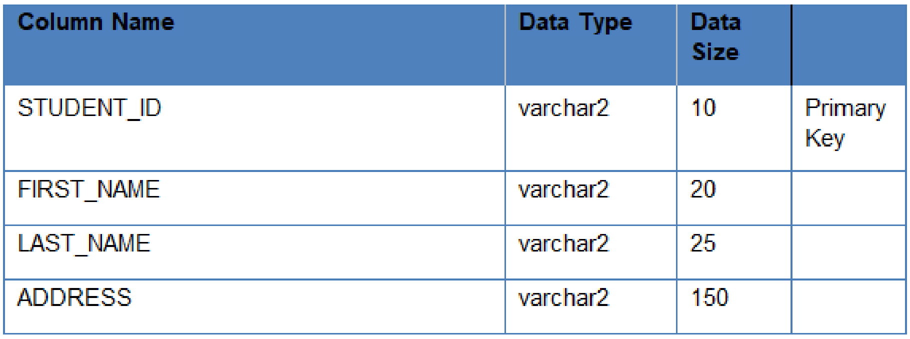
  Load the table with necessary data using the DML statements.

Input Data



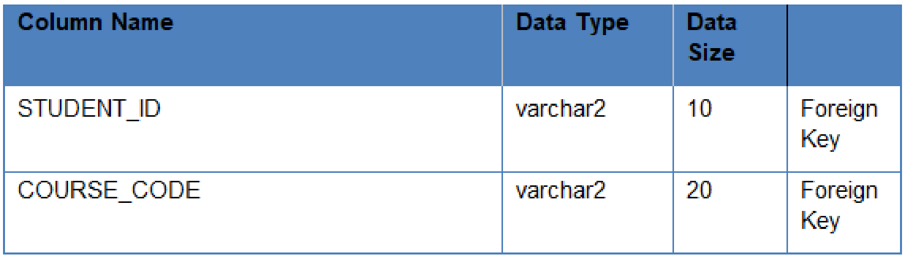
Column Name	Data Type	Data Size	
COURSE_CODE	varchar2	10	Primary Key
COURSE_NAME	varchar2	20	
COURSE_DESCRIPTION	varchar2	25 0	
COURSE_START_DATE	Date		
COURSE_DURATION	Number		
NO_OF_PARTICIPANTS	Number		
COURSE_TYPE	Char(3)		

Table 3.0



Column Name	Data Type	Data Size	
STUDENT_ID	varchar2	10	Primary Key
FIRST_NAME	varchar2	20	
LAST_NAME	varchar2	25	
ADDRESS	varchar2	150	

Table 4.0



Column Name	Data Type	Data Size	
STUDENT_ID	varchar2	10	Foreign Key
COURSE_CODE	varchar2	20	Foreign Key

Table 5.0

Exercise 1:

Calculate the total fees (base fees + Special fees) for all the courses and display the course code along with the total fees.

Exercise 2:

- Calculate the discount fees for all the courses and display the course code and discount fees.
- Discount fees = discount* (base fees + Special fees)/100

[Hint: Use the course_fees table for this.]

Exercise 3:

- Display the names of all the courses, the course duration of which is greater than 10 and number of participants is less than 20.

[Hint: Use the courses_info table for this.]

Exercise 4:

- Display the course code whose base fees are greater than 100 or special fees are less than 1000.

[Hint: Use the course_fees table for this.]

Exercise 5:

- Select all the courses whose base fee > 200.

[Hint: Use the course_fees table for this.]

Exercise 6:

- Display the students' ID, first name whose first name is different from their last name.

[Hint: Use the student_info table for this.]

Exercise 7:

- Select all the courses whose base fee is in the range 100 and 3000.

[Hint: Use the course_fees table for this.]

Exercise 8:

- Display the students ID, and first name, whose first name starts with 'A'

[Hint: Use the student_info table for this.]

Exercise 9:

- Display the students ID, first name whose first name has a character 'o'

[Hint: Use the student_info table for this.]

Exercise 10:

- Display the names of all the courses where the course description is Null.

[Hint: Use the courses_info table for this.]

3.2.5 Functions

The goal of this case study is to help ABC University create a Course Management System (CMS). The two use cases for which the database must be designed are as follows.

- Add Course

  To add the course details into the course management system.

- Retrieve Course

  Retrieve the courses stored in the system and display it.

Course Code, Course Name, Number of Participants, Course Description, Course Duration, Course Start Date, and Course Type are all attributes that will be added to the courses.

Prerequisite: Use the Course_Info and Course_Fees table.

- Insert 2 records in the course_fees table with base fees as null.
- Insert 2 records in the course_fees table with base fees as 300 and 175.

Exercise 1: Write a query which will display the total number of records in the Course_Info table.

Exercise 2: Develop a query which will gives the sum of all base fees of all courses in the Course_Fees table.
Prerequisite: We will use the Course_Info and Course_Fees tables for doing this. Add a new column Infra_Fees in course_fees with type number(5,3). For all the records in update the Infra_Fees with some values say 45.751, 43.453 etc.
Hint: Use joins wherever needed

Exercise 3: Develop a query which will display the course name and course Infra fees of all the courses. The infra fee should be rounded to one decimal point.

Exercise 4: Develop a query which will list all the course code and course names in Course_Info table where in the first letter should be capital letter.

Exercise 5: Develop a query which will display all the Course Name in upper case.

Exercise 6: Develop a query which will display all the characters between 1 and 3 of the Course Description column for all the courses in the Course_Info table.
Prerequisite: Use the Course_Info and Course_Fees table.

- Insert 2 records in the course_fees table with base fees as null.
- Insert 2 records in the course_fees table with base fees as 300 and 175.
- Insert 3 records in course_info table each course with course type CLR, EL, OF

Prerequisite: Let us use the Student_Info and Course_Fees table.

Exercise 7: Write a query which will convert Student_Info's Student_Id to Number and add 100000 and display it for all the students in the Student_Info table.

Exercise 8: Write a query which will convert Base_Fees into Varchar from the Course_Fees table and display in the following format:

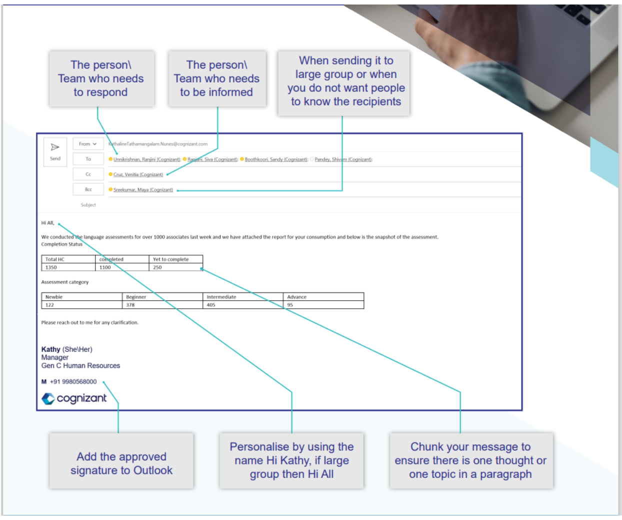
'The Base Fees Amount for the course name' <Course Name>' is '<Base Fees>'.

3.3 Behavioural Training

There were multiple fun activities in these sessions. I found the sessions very creative and innovative. I enjoyed the storytelling activity the most. Sessions regarding conference calls and email etiquettes were highly informative. I was also able to improve my quick-thinking ability. The sessions were very interactive and comprehensive. I also got to understand other people's point of view.

We mainly familiarise ourselves with email etiquettes. Some of them are:

- Use correct formatting, spelling, and grammar, and send a copy to everyone you mention.
- In a single sentence, the subject of an email describes its content and attachments.
- Keep everything in order. Respond to any related emails that have already been sent.
- Include a copy of the mail trail for future reference.
- Respond as soon as possible.
- Before sending an email, read it again.
- Don't forget to include a topic line.
- Don't use high priority too often.
- Don't use abbreviated forms or SMS jargon.
- Use a signature that has been approved by the company.



The person\ Team who needs to respond

The person\ Team who needs to be informed

When sending it to large group or when you do not want people to know the recipients

KathalineTathamangalam.Nunes@cognizant.com

Unnikrishnan, Ranjini (Cognizant); Ranjini, Siva (Cognizant); Boothkoori, Sandy (Cognizant); Pandey, Shivam (Cognizant);

Cruz, Venitia (Cognizant)

Sreekumar, Maya (Cognizant)

Hi All,

We conducted the language assessments for over 1000 associates last week and we have attached the report for your consumption and below is the snapshot of the assessment.

Completion Status

Total HC	completed	Yet to complete
1350	1100	250

Assessment category

Newbie	Beginner	Intermediate	Advance
122	378	405	95

Please reach out to me for any clarification.

Kathy (She\Her)
Manager
Gen C Human Resources

M +91 9980568000

cognizant

Add the approved signature to Outlook

Personalise by using the name Hi Kathy, if large group then Hi All

Chunk your message to ensure there is one thought or one topic in a paragraph

Figure 1.0

3.4 Informatica PowerCenter

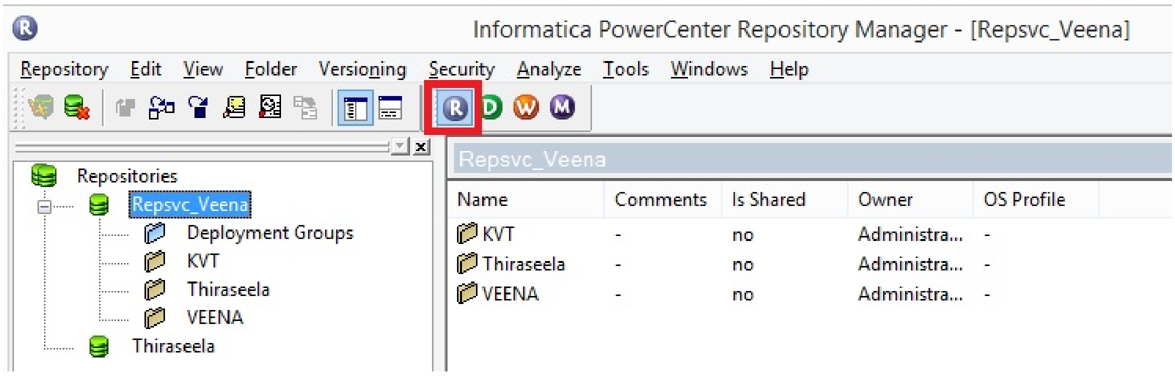
Our internship included many tasks, assignments, assessments and projects. This chapter tells you about it in detail. We were trained in various softwares. We had to complete assignments and hands-on activities to complete the internship successfully.

3.4.1 Repository Manager

The Repository Service manages the PowerCenter repository, which is a relational database. The metadata is stored in database tables in the repository. Metadata refers to several types of items that you can create or change with the PowerCenter Client tools, such as mappings and transformations. The Integration Service extracts, transforms, and loads data using repository objects. Users' permissions, for example, are likewise stored in the repository.

The Repository Service is used by all repository clients to access the repository database tables. By monitoring repository connections and employing object-locking to maintain object consistency, the Repository Service preserves metadata in the repository. When another user alters or deletes repository objects that you are utilising, the Repository Service tells you.

A single repository database is managed by each Repository Service. A Repository Service can be configured to execute on several machines, or nodes, in the domain. A Repository Service process is the name given to each instance operating on a node. This process conducts most repository-related actions by accessing database tables. The Repository Service communicates with the repository database using native drivers. TCP/IP is used to communicate with the Repository Service by the PowerCenter Client tools and the Integration Service. When a repository client connects to the repository, the Repository Service process is directly contacted.



Name	Comments	Is Shared	Owner	OS Profile
KVT	-	no	Administra...	-
Thiraseela	-	no	Administra...	-
VEENA	-	no	Administra...	-

Figure 2.0

The Repository Manager client tool, the Informatica Administrator, and the pmrep and infacmd command line applications are used to manage the repository.

You may manage and connect to many repositories. In the PowerCenter Client, a repository domain is a collection of repositories. A specific sort of repository called a global repository allows repository domains to share metadata. You can share the objects in a shared folder with other repositories in the repository domain when you configure shared folders in a repository. To reuse metadata, you share objects.

A repository domain is distinct from a PowerCenter domain, which is the PowerCenter environment's basic administrative unit.

You can enable the repository for version control if you have the team-based development option. In a versioned repository, you can keep numerous versions of things. Change management functions such as version comparison, change tracking, labelling, and deployment are also available.

A relational database houses the PowerCenter repository. The instructions for extracting, transforming, and loading data are stored in the repository database tables. The Repository Service allows repository clients to access the repository database tables. Any PowerCenter component that connects to the repository is referred to as a repository client.

Repository metadata transaction requests from repository clients are managed by the Repository Service. A single repository is managed by each Repository Service. Object-locking is used by the Repository Service to ensure metadata consistency in the repository.

A multi-threaded Repository Service process gets, inserts, and updates metadata in the repository database tables. A Repository Service process is a Repository Service instance that operates on a specific machine, or node.

Client metadata transaction requests are accepted by the Repository Service from the following PowerCenter components:

- Client tools for PowerCenter: Create and store mapping metadata in the repository using the Designer. Workflow metadata and connection object information can be stored in the repository using the Workflow Manager. To get workflow run status information and session logs created by the Workflow Monitor, use the Workflow Monitor. Integration Service is a service that connects two or more systems Create folders in the Repository Manager to organise and safeguard metadata. The Administrator tool can be used to manage the repository.

- Infacmd and Pmrep: PMrep can be used to manage repository metadata, such as listing repository objects. To conduct service-related tasks, such as creating or uninstalling a Repository Service, use infacmd.
- Integration Service: The Integration Service connects to the repository to schedule workflows when you start it. The Integration Service receives workflow task and mapping metadata from the repository when you run a workflow. The Integration Service writes workflow status information to the repository while the workflow is running.

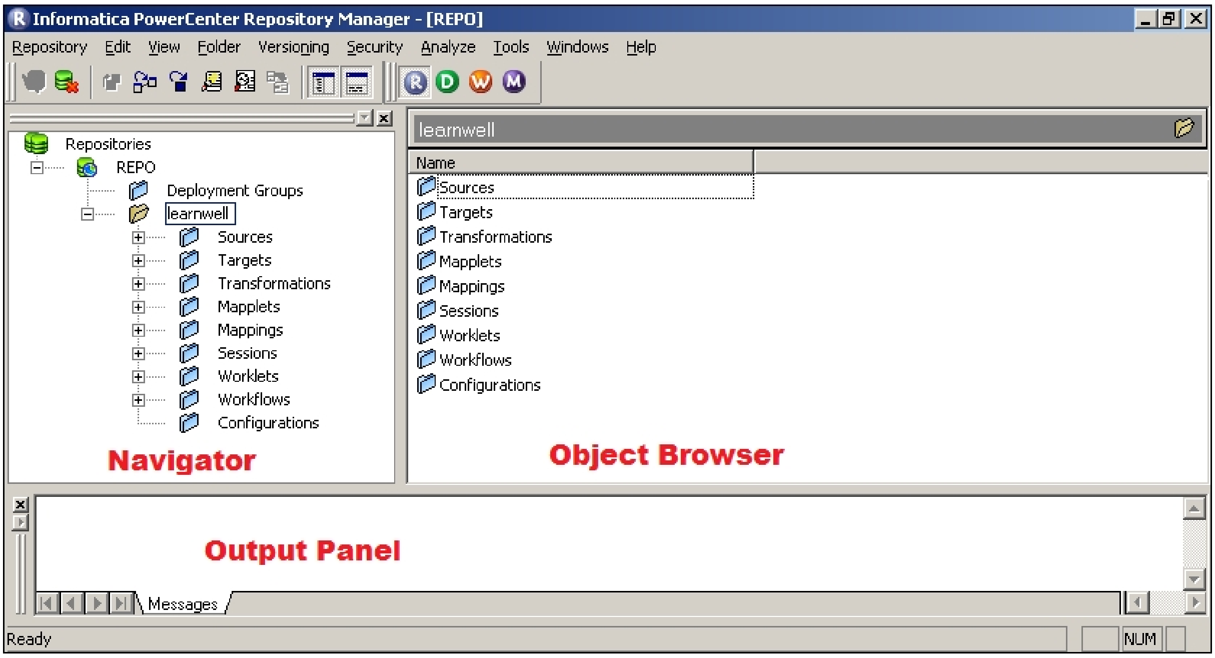


Figure 3.0

The Repository Service is used by clients such as the PowerCenter Client, the Integration Service, pmrep, and infacmd to connect to the repository. Repository clients communicate with the Repository Service over a TCP/IP connection using a specific port. When you install the Repository Service, you specify the TCP/IP port number.

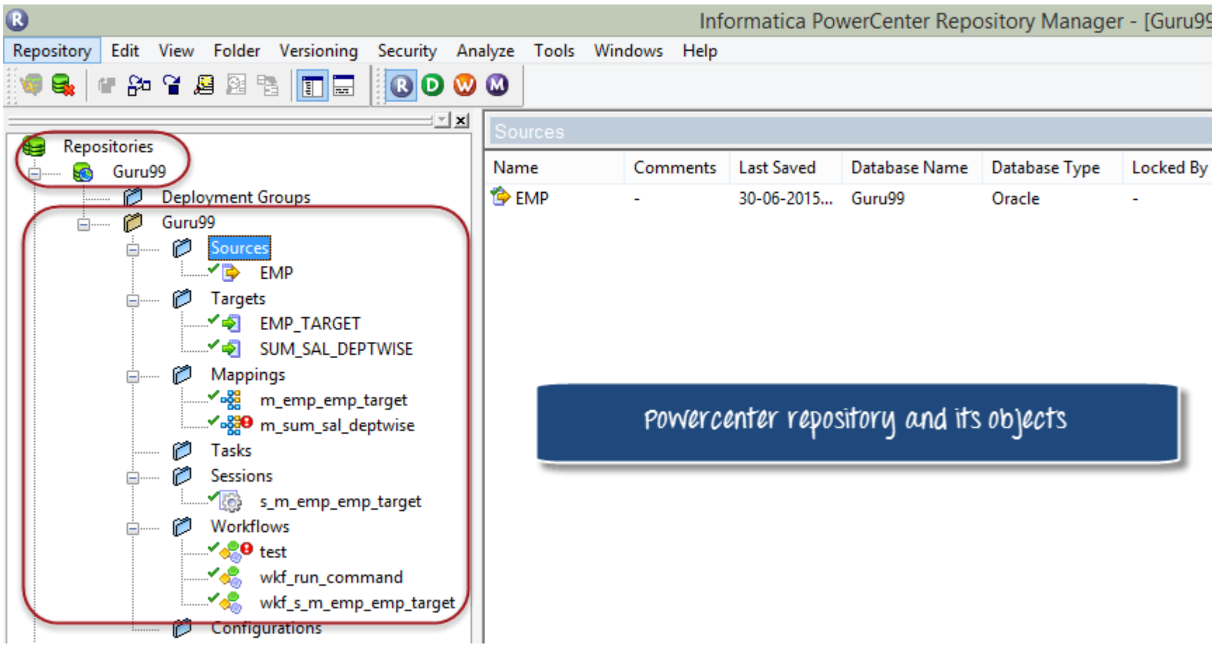
The Repository Service relies on another service called the Service Manager to send client requests to the right Repository Service process because PowerCenter services might be found on various nodes in the domain.

When you make modifications to a global object, the Repository Service updates the repository. To create each type of global object, you need separate PowerCenter Client tools. The following global items can be created:

- Labels: you can associate labels with any versioned object or set of versioned objects in a repository if you have a team-based development option. Labels can be used to keep track of versioned objects during development, to highlight milestones in development, to improve query results, and to organise groups of objects for deployment or import and export. To create and change labels, use the Repository Manager.
- Deployment groups: a deployment group is a collection of objects copied to a repository. You can establish a deployment group that includes references to items from various folders within the repository. You can establish a static deployment group and manually add objects to it, or you can create a dynamic deployment group and populate it with a query. To establish and change deployment groups, use the Repository Manager.
- Object queries: using an object query, you can search the repository for versioned and non tensioned objects that fulfil certain criteria. Object queries can be saved for later use. You have the option of creating a private object query or sharing it with all users in the repository. To construct and perform an object query, use the Designer, Workflow Manager, or Repository Manager.
- Connection objects: when you define database, FTP, and external loader connections in the Workflow Manager, you generate connection objects in the repository. Permissions can be configured and managed within each connection object. To build and change connection objects, use the Workflow Manager.

By grouping versioned items, labels, deployment groups, and object searches aid version control.

A database for the repository tables is required before you can build a repository. The database is created with the database management system client. The name of the repository database must be unique. You can use the Administrator tool to build a Repository Service to manage the repository after you've created a database for it. You can construct the database tables for the repository when you create the Repository Service. You can also construct the Repository Service without having to create any database tables. The repository tables can be created later or existing database tables might be used. The repository and the Repository Service have the same name.



Name	Comments	Last Saved	Database Name	Database Type	Locked By
EMP	-	30-06-2015...	Guru99	Oracle	-

Powercenter repository and its objects

Figure 4.0

In the Repository Manager, after you've created the repository, you can add folders to it. Organise repository objects into folders. Different types of metadata and projects can be separated into easily recognised regions.

You can set up a shared folder so that its contents are accessible to all other folders in the repository. If you're going to reuse an object across multiple projects, put it in a common folder. For example, you keep a definition of the CUSTOMERS table in a shared folder, which supplies data for a range of projects. In other folders in the same repository, you create shortcuts to the table. You can also create shortcuts to the CUSTOMER table in folders in local repositories that are registered with the repository domain if you're working in a repository domain.

On the Security page of the Administrator tool, you may manage users, groups, privileges, and responsibilities. Users and groups are stored in the domain configuration database, and the list of users and groups is copied to the PowerCenter repository by the Service Manager. The Service Manager synchronises the repository's list of users and groups with the domain configuration database's list of users and groups on a regular basis. The Repository Service maintains privilege, role, and permission assignments with the list of users and groups in the repository when you assign privileges and roles to users and groups in the Administrator tool or when you grant permissions to users and groups in the PowerCenter Client.

The PowerCenter Client is where you handle repository object permissions. Access to folders and objects in the repository is controlled by permissions. Even though a user has the authority to do certain activities, he or she may need permission to conduct those actions on a specific object. The person that performs the workflow must have permission on the operating system profile that is assigned to the workflow or folder that includes the workflow if the Integration Service employs operating system profiles.

You can create folders in the Repository Manager and give rights to them to secure data in the repository. By default, you are the owner of a folder when you create it. All permissions belong to the owner, and you can't modify them. The repository's owner can grant permissions to users, groups, operating system profiles, and others. To perform workflows, an operating system profile must be assigned to the folder if the Integration Service employs operating system profiles.

3.4.2 Designer

There are many components in the designer.

- Source Definition: source data is described in detail for database objects (tables, views, and synonyms), flat files, XML files, or COBOL files. A source definition might comprise the EMPLOYEES table's whole structure, including the table name, column names and datatypes, as well as any constraints applied to these columns, such as NOT NULL or PRIMARY KEY. Import and create source definitions with the Source Analyzer tool.
- Target Definition: to receive altered data, detailed descriptions for database objects, flat files, or XML files are required. The Integration Service writes modified data to targets during a session. Import or create target definitions with the Target Designer tool. Definitions of the objectives. To receive altered data, detailed descriptions for database objects, flat files, or XML files are required. The Integration Service writes modified data to targets during a session. Import or create target definitions with the Target Designer tool.
- Transformations: in a mapping or mapplet, a transformation generates, alters, or passes data through ports. You apply transformations and customise them to handle data according to your business objective when you develop a mapping or mapplet.

- Reusable Transformations: within a folder, a repository, or a repository domain, you can create a transformation that you can reuse in many mappings or mapplets. Rather than having to redo the same transformation over and over, you can make it reusable and add instances of it to individual mappings or mapplets. Create reusable transformations with the Transformation Developer tool.
- Mappings: a mapping describes how data is moved and transformed from sources to destinations. Source and destination definitions, as well as transformations, are included in mappings. The Integration Service transforms data using transformations. Shortcuts, reusable transformations, and mapplets are all examples of mappings. To construct mappings, use the Mapping Designer tool.
- Mapplets: within a folder, a repository, or a repository domain, you can create a mapplet that contains sets of transformation logic that can be reused in many mappings. You can construct a mapplet containing the transformations and then add instances of the mapplet to various mappings rather than having to recreate the same set of transformations each time. To make mapplets, use the Mapplet Designer tool.
- User-defined functions: the PowerCenter transformation language allows you to design user-defined functions. To reuse expression logic and develop complex expressions, create user-defined functions. Other users in a repository can access user-defined functions.
- Multi-dimensional metadata: the logical structuring of data utilised for analysis in OLAP applications is referred to as multi-dimensional metadata. End users of OLAP applications frequently use dimensions and cubes. Create dimensions and cubes with the Target Designer tool.

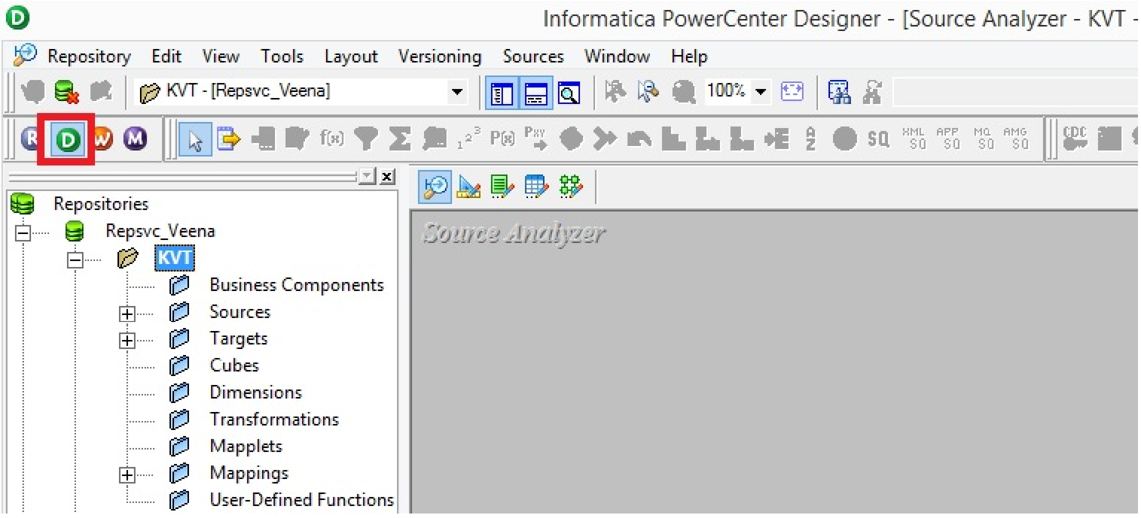


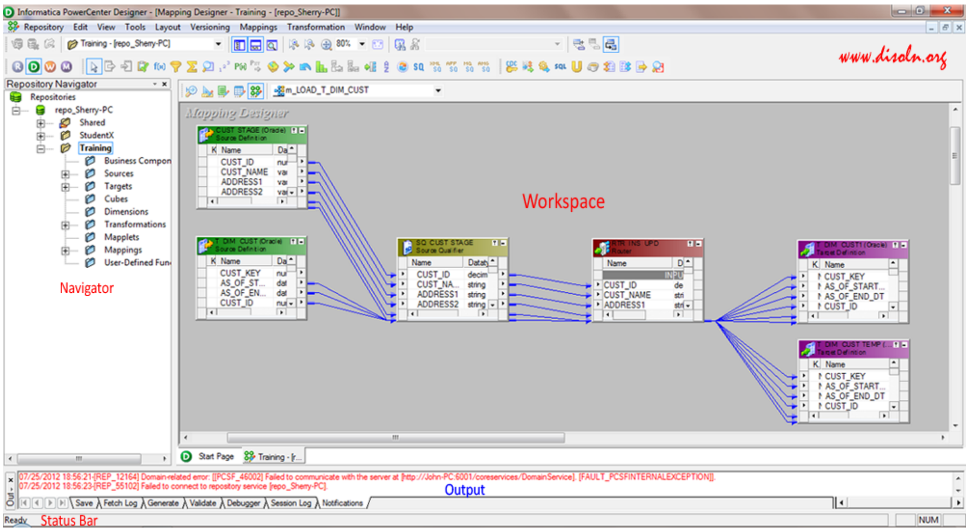
Figure 5.0

You can also make metadata shortcuts in shared folders. Objects in shared folders can be accessed using shortcuts.

Local shortcuts to shared folders inside the same repository and global shortcuts to shared folders in the repository domain's global repository are both possible. Create shortcuts with the Designer.

The following windows make up the Designer:

- Navigator: connect to a number of different repositories and folders. The Navigator also allows you to clone and delete objects as well as create shortcuts.
- Workspace: sources, targets, mapplets, transformations, and mappings can all be seen or edited. In the workspace, which comes in two flavours: default and workbook, you work with a single tool at a time. In the workspace, you can see many versions of an object.
- Status bar: visual representation of the current state of The status of the operation you're performing is displayed.
- Output: when you execute particular operations, such as saving work or validating a mapping, it gives you more information. To access window settings such as printing output text, saving text to file, and adjusting the font size, right-click the Output window.
- Overview: view workbooks with a lot of items or huge mappings. The Overview pane shows selected objects in colour and outlines the viewable region in the workspace. Click View > Overview Window to bring up the Overview window.
- Instance data: view transformation data while debugging a mapping with the debugger.
- Target data: view target data while debugging a mapping using the Debugger.



```
07/25/2012 18:56:21-[REP_12164] Domain-related error: [[PCSF_46002] Failed to communicate with the server at [http://John-PC:6001/coreservices/DomainService]. [FAULT_PCSFINTERNALEXCEPTION]].
07/25/2012 18:56:23-[REP_55102] Failed to connect to repository service [repo_Sherry-PC].
```

Figure 6.0

3.4.3 Workflow Manager

You create a workflow in the Workflow Manager to execute mappings you create in the Designer by defining a collection of instructions called a workflow. In general, a workflow consists of a session and any additional tasks you would wish to complete when running a session. A session, an email notification, or scheduling information are examples of tasks. Each task is linked to other tasks in the workflow.

In the Workflow Manager, you can also build a worklet. A worklet is a container for a bunch of tasks. A worklet is similar to a workflow, however it does not include any scheduling information. Within a workflow, you can run a batch of worklets.

You execute a workflow in the Workflow Manager and monitor it in the Workflow Monitor after you've created it.

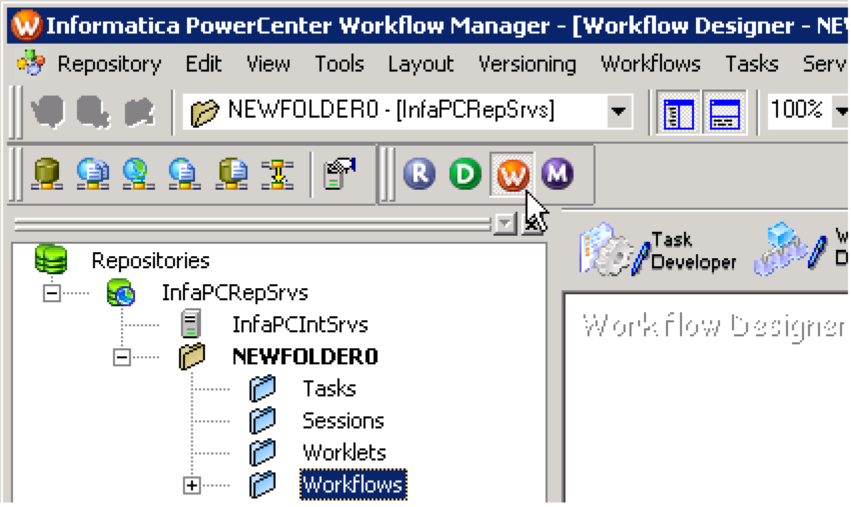
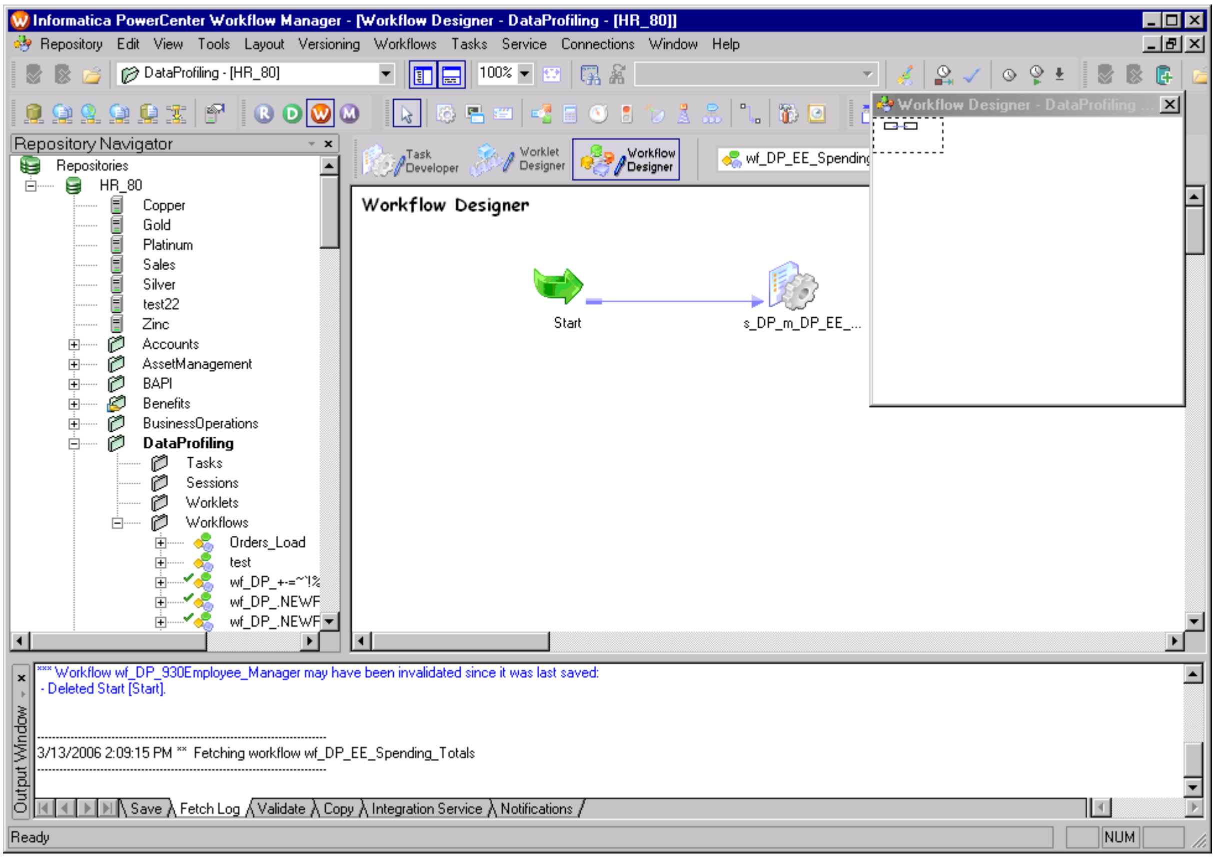


Figure 7.0

There are many components in the workflow manager.

- Database connections: database connections are used by the Integration Service to connect to the source and target databases.
- Sessions: Sessions are workflow activities that contain details on how the Integration Service maps data. For each mapping you want to execute, you must create a session. Place the session in a workflow to run it. To create sessions, use the Workflow Designer.
- Workflows: The Integration Service employs a workflow to extract, transform, and load data. A workflow is a set of instructions divided into tasks that the Integration Service uses to extract, transform, and load data.

- Workflow tasks: Workflow tasks are commands that the Integration Service executes when a workflow is run. Workflow tasks are tasks that are performed in addition to extracting, manipulating, and loading data. Commands, judgments, timers, and email notifications are all examples of workflow tasks.
- Worklets: Worklets are objects that represent a collection of workflow tasks and allow you to reuse workflow functionality across many workflows. Worklets can be run in workflows and nested within other worklets.



```
*** Workflow wf_DP_930Employee_Manager may have been invalidated since it was last saved:
- Deleted Start [Start].

3/13/2006 2:09:15 PM ** Fetching workflow wf_DP_EE_Spending_Totals
```

Figure 8.0

To develop a workflow, start by creating tasks like a session, which contains the mapping you created in the Designer. You then use conditional linkages to describe the sequence in which the tasks you created will be executed. The Workflow Manager has three features to assist you in creating a workflow:

- Task Developer: create jobs to run in the workflow using the Task Developer.
- Workflow Designer: create a process with the Workflow Designer by linking tasks with links. As you construct the workflow, you may also create tasks in the Workflow Designer.
- Worklet Designer: to make a worklet, use the Worklet Designer.

In the Workflow Manager, you may create the following sorts of tasks:

- Assignment. A workflow variable is given a value.
- Command. This parameter specifies a shell command that will be executed during the workflow.
- Control. The workflow is stopped or aborted.
- Decision. Indicates the condition to be evaluated.
- Email. During the workflow, it sends an email.
- Event-Raise. The Event-Wait task is notified when an event has happened.
- Event-Wait. Before starting the next task, it waits for an event to happen.
- Session. This command executes a mapping that you created in the Designer.
- Timer. Waits for a scheduled event to occur.

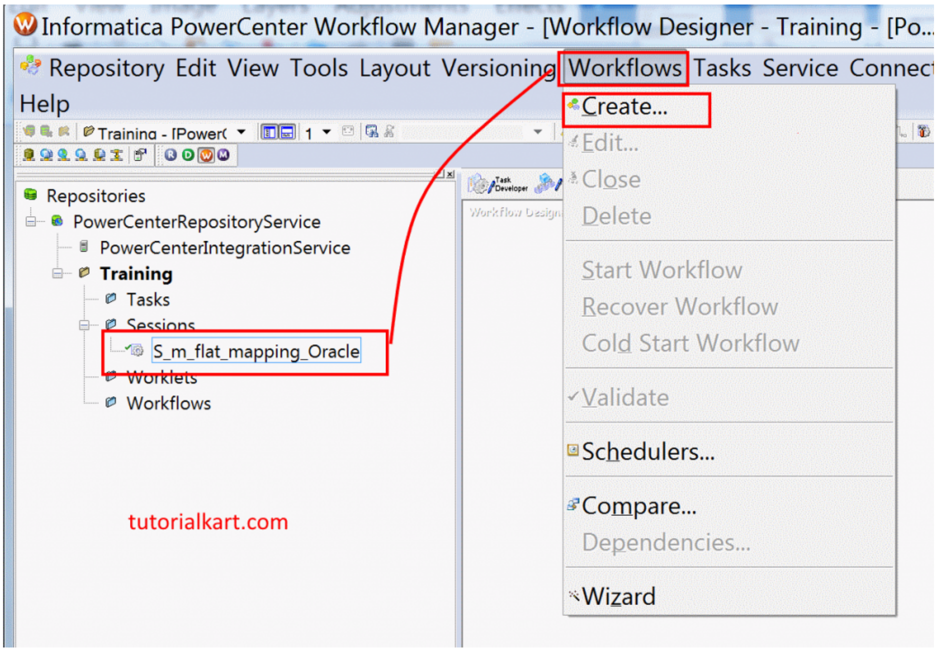


Figure 9.0

3.4.4 Workflow Monitor

The Workflow Monitor gives you the ability to see details about workflow runs. By connecting to an Integration Service after opening the Workflow Monitor and connecting to a repository, you can examine dynamic information about workflow executions.

You can adjust the Workflow Monitor's display by setting the maximum number of days or workflow runs it displays. In both the Gantt Chart and Task view, you can filter tasks and Integration Services.

The Workflow Monitor allows you to keep track of workflows and tasks. A workflow is a set of instructions that instructs an Integration Service on how to do activities. Nodes or grids are used to operate Integration Services. A domain is made up of nodes, grids, and services.

You may view details about a process or task in Gantt Chart or Task view using the Workflow Monitor. Details regarding the Integration Service, nodes, and grids can also be viewed.

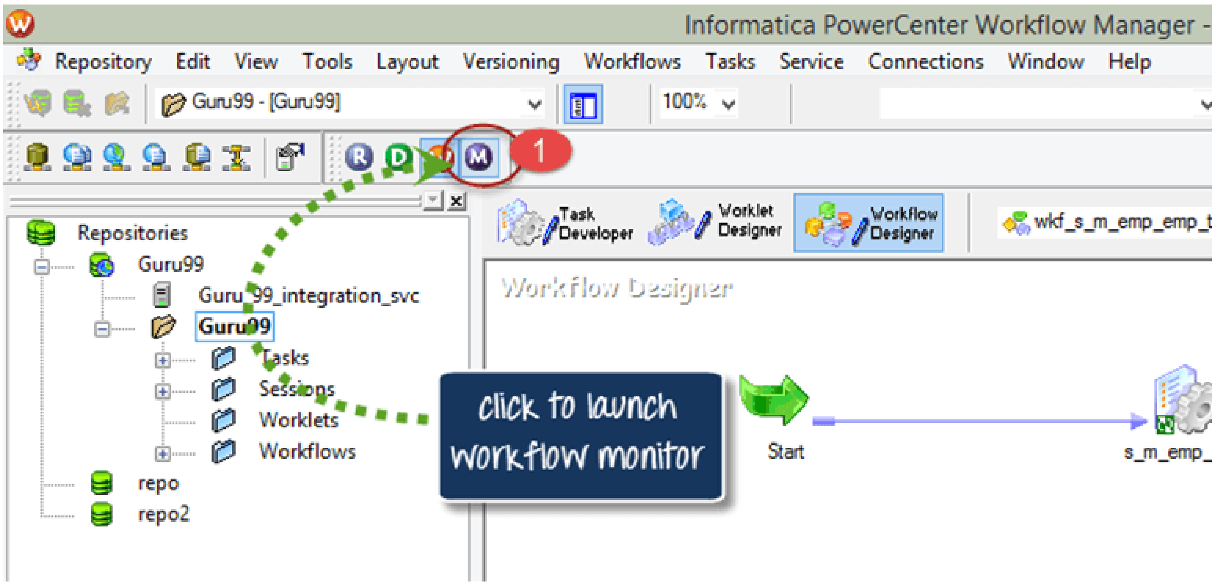


Figure 10.0

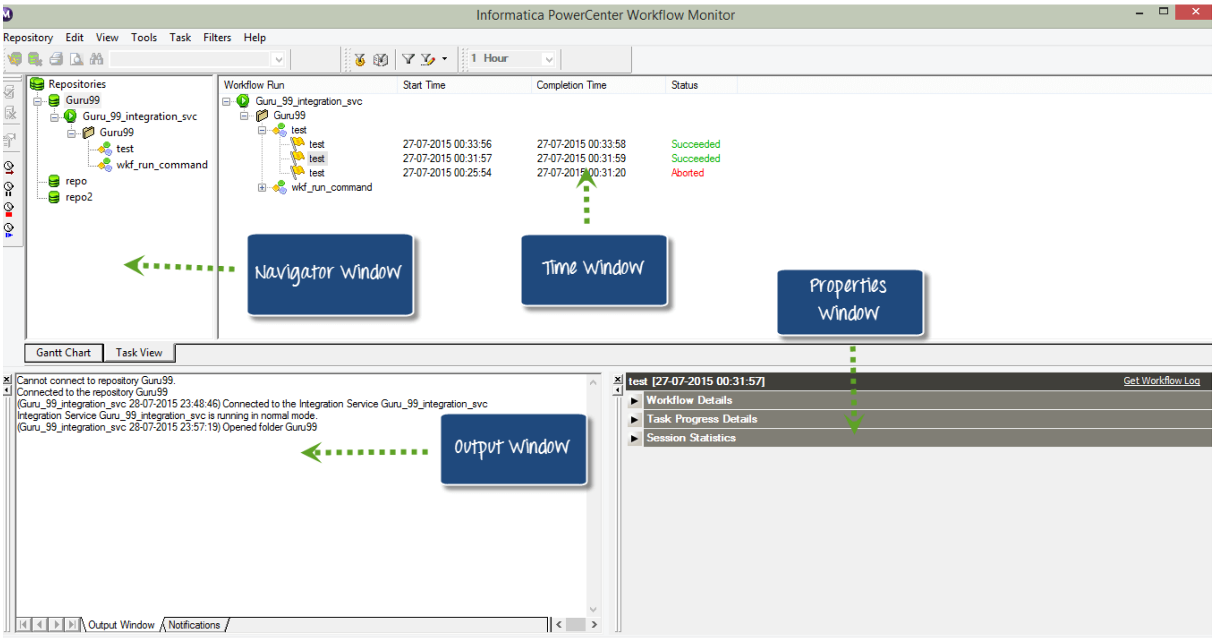
Workflows that have been run at least once are displayed in the Workflow Monitor. Workflows can be started, stopped, aborted, and resumed using the Workflow Monitor. The Integration Service and Repository Service send data to the Workflow Monitor on a regular basis. It also retrieves data from the repository in order to present historical data.

The Workflow Monitor shows time in relation to the Integration Service node's time configuration. A folder, for example, may contain two workflows. One process operates on an Integration Service in the local time zone, while the other runs two hours later on an Integration Service in a different time zone. When both workflows start at 9 a.m. local time, the Workflow Monitor displays the start time as 9 a.m. for one and 11 a.m. for the other. By tapping the tabs at the bottom of the Workflow Monitor, you may switch between Gantt Chart and Task views.

In the Workflow Monitor, you can show and hide the Output and Properties panes.

Click View > Output to show or hide the Output pane.

Click View > Properties View to see or hide the Properties window. The Output and Properties windows can also be docked at the bottom of the Workflow Monitor workspace. Right-click a window and select Allow Docking to dock the Output or Properties window. Drag the window to the bottom of the workspace if it is floating. The windows float in the Workflow Monitor workspace if docking is disabled.



Workflow Run	Start Time	Completion Time	Status
Guru_99_integration_svc			
Guru99			
test			
test	27-07-2015 00:33:56	27-07-2015 00:33:58	Succeeded
test	27-07-2015 00:31:57	27-07-2015 00:31:59	Succeeded
test	27-07-2015 00:25:54	27-07-2015 00:31:20	Aborted
wkf_run_command			

```
Cannot connect to repository Guru99.
Connected to the repository Guru99
(Guru_99_integration_svc 28-07-2015 23:48:46) Connected to the Integration Service Guru_99_integration_svc
Integration Service Guru_99_integration_svc is running in normal mode.
(Guru_99_integration_svc 28-07-2015 23:57:19) Opened folder Guru99
```

test [27-07-2015 00:31:57]

Figure 11.0

The Workflow Monitor gives you the ability to see details about workflow runs. By connecting to an Integration Service after opening the Workflow Monitor and connecting to a repository, you can examine dynamic information about workflow executions.

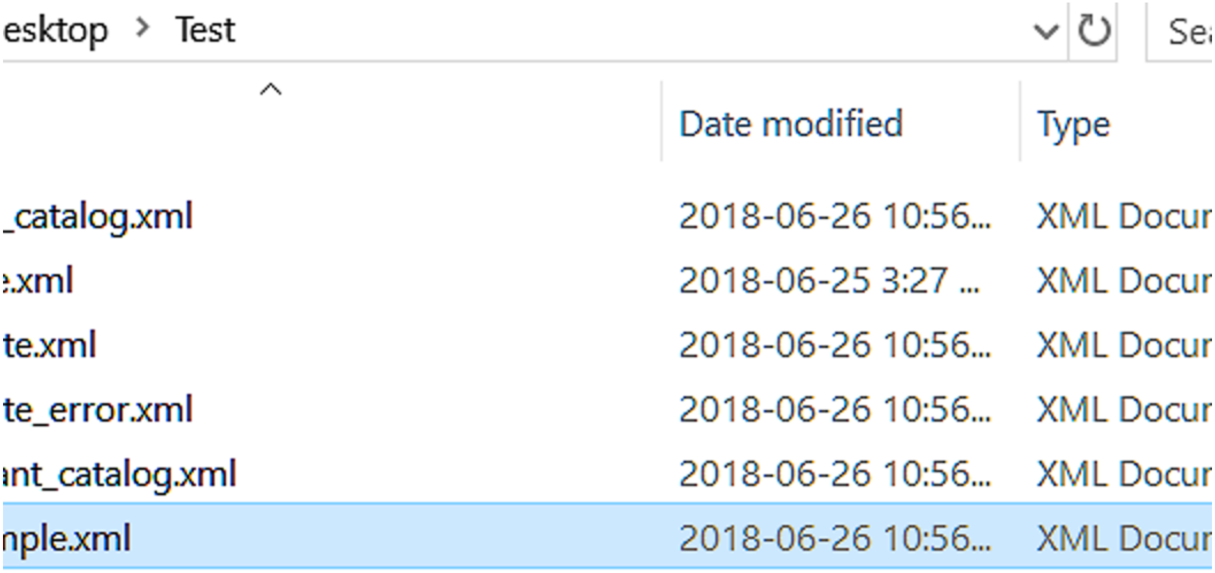
You can adjust the Workflow Monitor's display by setting the maximum number of days or workflow runs it displays. In both the Gantt Chart and Task view, you can filter tasks and Integration Services.

To keep track of workflows, complete the steps below:

1. Go to the Workflow Monitor and open it.
2. Open a connection to the workflow repository.
3. Establish a connection with the Integration Service.
4. Choose the workflow you wish to track.
5. Choose between Gantt Chart and Task views.

3.4.5 XML Markup Language

This is the second stage, deep learning of application development through the advanced framework of java. This is the stage where we learned the XML framework. XML is a markup language that defines a set of rules for encoding documents in a format that is both human-readable and machine-readable. The World Wide Web Consortium's XML 1.0 Specification of 1998 and several other related specifications—all of them free open standards—define XML. The design goals of XML emphasise simplicity, generality, and usability across the Internet. Several schema systems exist to aid in the definition of XML-based languages, while programmers have developed many application programming interfaces (APIs) to aid the processing of XML data.



	Date modified	Type
_catalog.xml	2018-06-26 10:56...	XML Docur
:.xml	2018-06-25 3:27 ...	XML Docur
te.xml	2018-06-26 10:56...	XML Docur
te_error.xml	2018-06-26 10:56...	XML Docur
ınt_catalog.xml	2018-06-26 10:56...	XML Docur
nple.xml	2018-06-26 10:56...	XML Docur

Figure 12.0

CHAPTER 4
PERFORMANCE ANALYSIS

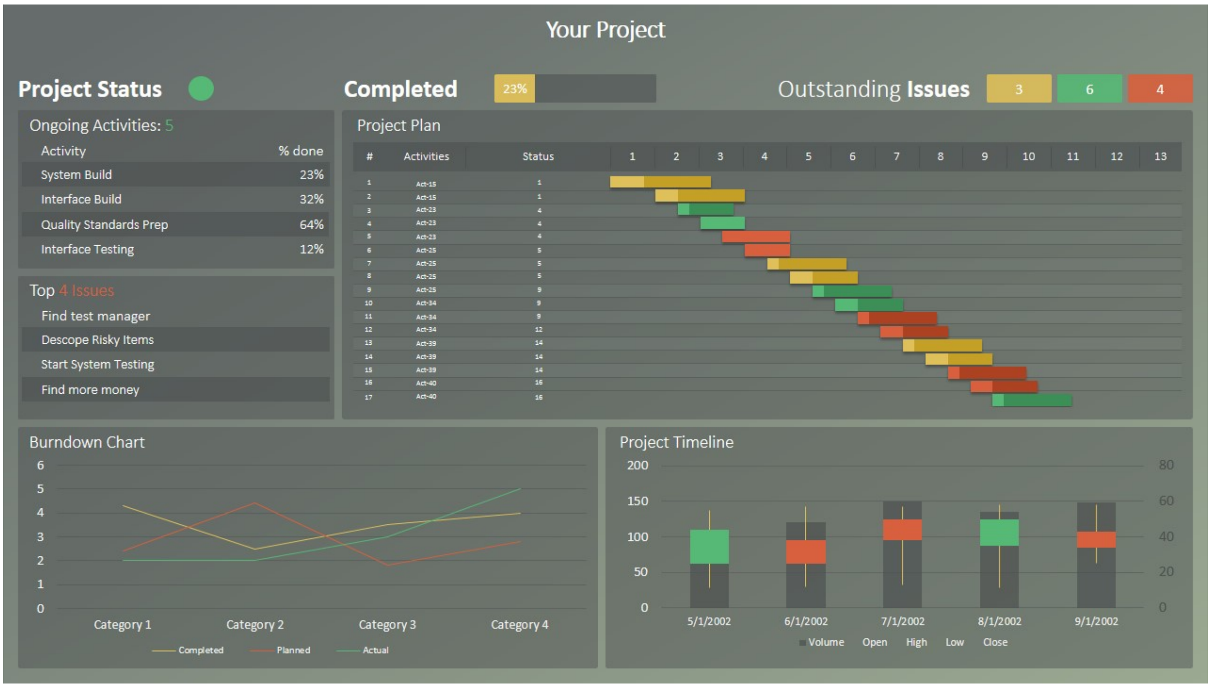
We used MySQL Workbench and Informatica PowerCenter in this internship to contribute to the future development of Cognizant. We enhanced our skills and trained aggressively to be an asset to the firm. We will continue to do so for our personal and professional development and growth.

4.1 RAG Score

- R denotes Red: Score < 70
- A denotes Amber: Score 70 – 80
- G denotes Green: Score > 80

A graph would be plotted during your internship based on your assessment results. With each of your assessments, you must ensure that the graph is coloured green. Amber is also acceptable but not encouraged. If your grades continue to be bad, i.e. if the majority of your graph is red, your internship may be cancelled.

This is a detailed RAG score report.



Your Project

Project Status ●

Completed 23%

Outstanding Issues 3 6 4

Ongoing Activities: 5

Activity	% done
System Build	23%
Interface Build	32%
Quality Standards Prep	64%
Interface Testing	12%

Top 4 Issues

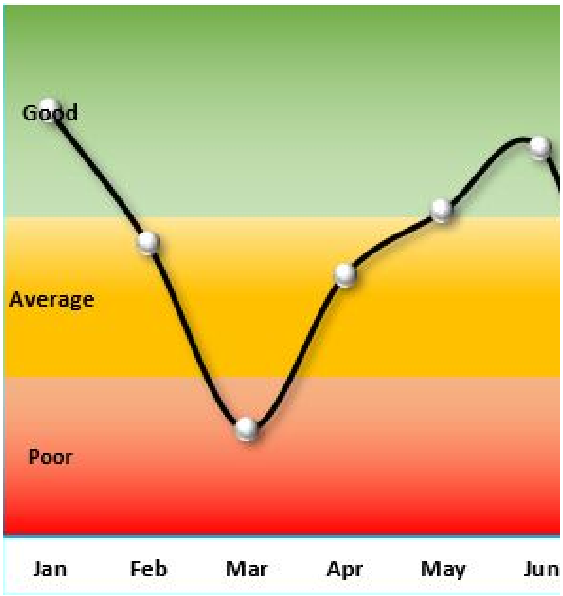
- Find test manager
- Descope Risky Items
- Start System Testing
- Find more money

Project Plan

#	Activities	Status
1	Act-15	1
2	Act-15	1
3	Act-23	4
4	Act-23	4
5	Act-23	4
6	Act-25	5
7	Act-25	5
8	Act-25	5
9	Act-25	9
10	Act-34	9
11	Act-34	9
12	Act-34	12
13	Act-39	14
14	Act-39	14
15	Act-39	14
16	Act-40	16
17	Act-40	16

Graph 1.0

These are some basic symbology.



Graph 2.0

4.2 Results

My performance scores are as follows:

- SQL Assessment: 95%
- Informatica Knowledge Based Assessment: 80%
  - Repository Manager: 71%
  - Designer: 75%
  - Workflow Manager: 81%
  - Workflow Monitor: 100%
- Informatica Skill Based Assessment: 93%
- ETL Design Document Project: 95%
- British Council Score: C1 Advanced English
- EF SET Score: 82% C2 Proficient English

CHAPTER 5
CONCLUSIONS

5.1 Conclusion

I have successfully completed my internship with Cognizant and I have learned so much from this internship. It has really helped me in shaping my personality and equipping me with the knowledge of these technologies.

I would like to thank in advance to the coaches, SME, mentor and trainer of cognizant who guided me through the whole journey of my internship in cognizant and solved all my doubts during the internship. The Coaches, SME, Mentor and trainer were all of good nature and at every moment helped me when I was doing wrong and shaped me during my whole internship.

Specially the my mentor gave his more effort during the internship and passed our all query to the higher authority in the company whether it was related to the reattempt of the assessment, technical issue faced in the assessment or providing extra time to complete the work.

I would highly recommend my juniors to prepare well for the offer in the cognizant and get the internship opportunity from the cognizant because cognizant is a top fortune company in the information technology field.

I would like thank my TNP officer Mr. Pankaj Kumar and Faculty member Dr. Nafis U khan sir for their support and hard work during the whole placement process because I know how complex the management of the placement drive is.

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