



Experiment - 1

Date of Performance: 26/03/2022

Date of Submission: 09/04/2022

DIV: A

Batch: A4

Team Members:

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Aim: To identify a suitable life cycle model for your case study and justify your choice

ABSTRACT:

The main aim of this case study is to analyse tourist's behaviour based on the locations and places they have visited so far, to identify tourist interests, popular locations and to plan future tourism demands. It supports strategic decision-making in tourism destination management.

Due to the covid crisis, the tourism industry of our country has been facing a lot of repercussions. The pandemic has a huge impact on the tourism industry due to the resulting travel restrictions as well as slump in demand among travellers.

The collapse in travel will bring long-term changes. The aim of this project is to help the government and states to revive the interests of people in travel.

Features:

1. Make use of geotagged images on social media for data extraction.
2. Structure the tourist demographic data for all the locations in the vicinity.
3. Predict tourism demands for various locations with the help of time variant data.
4. Develop a comprehensive review system with the help of image and text processing which can be passed on to relevant authorities.

Overview- Extremely large amounts of data can be collected from social media sites about people who have visited a particular place. While this data will not be in a presentable form, with help of certain data processing techniques, we can make use of this data and provide it to the government or the local authorities and inform them about various tourism interests in their areas. Hotel Chains and Restaurants can also use this data for knowing which periods have the maximum tourist footfall and plan accordingly. By comparing monthly tourism traffic data over the years, we can try and identify strategic decisions which led to the boom of tourism at a particular place and also some logistical shortcomings which if corrected will lead to more tourists at that place. This can also work as a 'Places to Visit' guide for tourists who know nothing about a particular place.



Process Model: Spiral Model, RAD Model and Waterfall model

Our Choice: Spiral Model

JUSTIFICATION:

Why not the waterfall model?

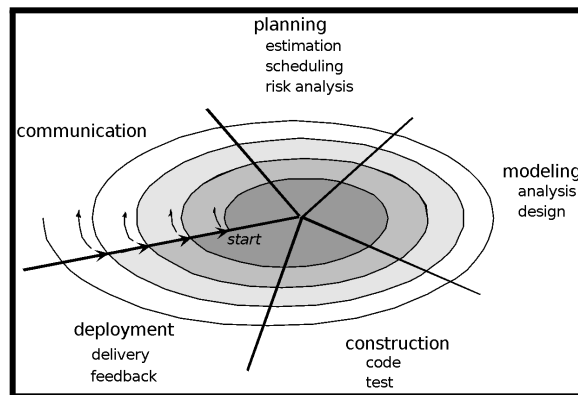
- In waterfall model, early stage planning is critical and we won't have all of the requirements available at the beginning of the project
- Also, the waterfall model is more suitable for small-scale projects and since our project would require data on a global level, waterfall model is not preferred.
- The waterfall model is inflexible to changes and our model will have to be continuously updated after frequent reviews, the waterfall model won't fit our needs.

Why not the RAD model?

- In RAD, testing is done after completion of the project whereas our model will need to be frequently tested as and when updates are made.
- RAD model is more suitable for small-mid scale projects, less time consuming projects whereas our project is on a large scale.\

Why the Spiral model:

1. This model is easily acceptable to the ever-changing needs of the project. The tourist analysis behaviour requires constant extraction of data, cleaning of the data and analysing it to propose it to the local authorities. However, the data keeps varying over time hence requiring a change in the analysis of the same.
2. More resources are required for the spiral model. Huge amounts of data is extracted by social media accounts as well as from the local authorities, hence providing adequate resources.
3. The local authorities after testing the proposed analysis may implement the solution and find it to be not entirely accurate. Hence improvements are required to be done on a regular basis. Hence the implementation may be changed repetitively due to imperfect requirements.
4. Once the analysis is done for a smaller quantity of data, the testing of the result can be done accurately. If during testing it is found that the solutions do not meet the expectations, changes can be made since it is a small iteration.



- a. **Requirement gathering and analysis:** Communication is carried out with the local authorities to know the issues they have been facing and the ways they are undertaking to boost the tourism industry. Depending on the issues and the requirements they propose, we analyse them.
- b. **Planning and Modelling:** In these phases we design the flow of the process by various diagrams. The ways of data extraction and data analysis are decided.
- c. **Construction:** The data is cleaned, stored in the appropriate manner, various methods of analysis are applied on the data.
- d. **Testing:** The results found in the implementation phase are tested.
- e. **Feedback:** In this phase review is to be performed to check the behaviour of the proposed solutions to the local authorities. Depending on the accuracy of the solutions, the process starts again from the new requirements gathering if any and design, implementation, review etc.
- f. **Deployment:** After completing all phases, the final solutions are proposed as a research paper.
- g. **Maintenance:** If there are any changes occurring over time, they can be reflected in the research paper.

CONCLUSION:

We learnt about the different types of process models and justified the most suitable life cycle model for project execution in our case study.



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Experiment No. 2

Aim: To develop Software Requirement Specification (SRS) document in IEEE format for the project.

Theory:

SRS Software Requirements Specification

A document that specifies most of the requirements as required by the customer and as understood by the software engineer.

A well formatted document that includes scope, purpose, product perspective, software and hardware requirements, functional and non-functional requirements for the product.

Performance:

1. Identify a suitable case study with the scope for software engineering process.
2. Explain the abstract in one page clearly explaining the project with their functionalities.
3. Each project should have at least 4 functional requirements clearly explaining each functionality by referring to the given SRS template.
4. Prepare a well-formatted document

Conclusion:

In this experiment we were able to make an SRS for our case study and clearly understood the process and requirements for an SRS.

Software Requirements Specification

for

Travel Buddy

Version 1.0

Prepared by

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Instructor: Dr. Kiran Bhowmick

Course: Software Engineering

Lab Section: Software Engineering Lab

Teaching Assistant: Dr. Kiran Bhowmick

Date: 30th April 2022

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Revisions

Version	Primary Author(s)	Description of Version	Date Completed
1.0	Dhruvi Jodhawat Harvy Gandhi Junaid Girkar	First Draft.	30/04/22



Academic Year: 2021_22

1 Introduction

1.1 Document Purpose

This is a SRS for the project Travel Buddy - Version 1.0. The purpose of this Software Requirement Specifications document is to clearly define the technical aspect of the product we intend to build. It covers how the first version of the application will interact with the users, hardware, software and other interconnecting applications. It specifies the requirements, technical details and the limitations of the project which shall help us ensure we utilize all the factors correctly, satisfy all product requirements and provide the best possible product to our users.

1.2 Product Scope

The project scope is not limited to a specific city or a country but it has an extensive scope at a global level. The project will be used by people who are going on vacations and are searching for destinations. If people already have a location in mind, they can search for detailed information about that location and nearby places to visit. For those users who don't have a decided location, the project will recommend places based on travel history, time and weather based analysis. Local authorities can also use this project to update information about places and to get advance ideas about incoming tourist traffic. The project will not be a booking platform and will be just for sharing information.

1.3 Intended Audience and Document Overview

The document is organised in a climactic sequence. The document opens with a brief abstract that introduces the theme and sets the tone for the subsequent parts. Following that, the document describes its characteristics and introduces the issue statement. It then goes on to provide an overview of the project's users, environment, and limits. The document then goes on to describe the different interfaces and project needs. The document also includes references to pertinent research publications and sources. The document is intended for all users as well as the project's technical developers.

The intended audience for this mini project is firstly the local authorities. By accessing the clusters formed after extracting the tourist information, the local authorities can get an idea of what the tourists are enjoying along with which areas are receiving less footfall than expected. Investments can be made along similar lines. The other target audiences would be tourists who would like to know the major attractions in an area that too from actual social media posts rather than the tourism related websites. The other target audiences are researchers who will search for appropriate data and collect various ways to perform further analysis.



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1.4 Definitions, Acronyms and Abbreviations

Some of the terms that can be frequently encountered in the SRS are listed below

- **Behaviour Analysis** - Finding recurring patterns in data for future recommendations.
- **Data Extraction** - Scraping of data from social media.
- **GUI** - Graphical User Interface.
- **RAM** - Random Access Memory
- **API** - Application Programming Interface
- **GPS** - Global Positioning System

1.5 Document Conventions

The following conventions were followed while creating the document:

- We have used the IEEE standards for document formatting.
- The font used is Arial, font size for title is 14 and font size for text is 12.
- Italics have been used for comments.
- 1" margin has been maintained throughout the document.
- The text is single spaced.

1.6 References and Acknowledgments

<https://www.frontiersin.org/articles/10.3389/fpsyg.2020.00599/full>
https://www.researchgate.net/publication/345868027_Tourist_Behaviour_Analysis_Based_on_Digital_Pattern_of_Life-An_Approach_and_Case_Study
<https://ieeexplore.ieee.org/document/9263945>
<https://studentprojectguide.com/wp-content/uploads/2017/11/Travel-And-Tourism-Management-System-SRS.pdf>
<https://www.sciencedirect.com/science/article/abs/pii/S0378720616303573>
<https://www.google.com/maps/>
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<https://phpgurukul.com/tourism-management-system-free-download/>

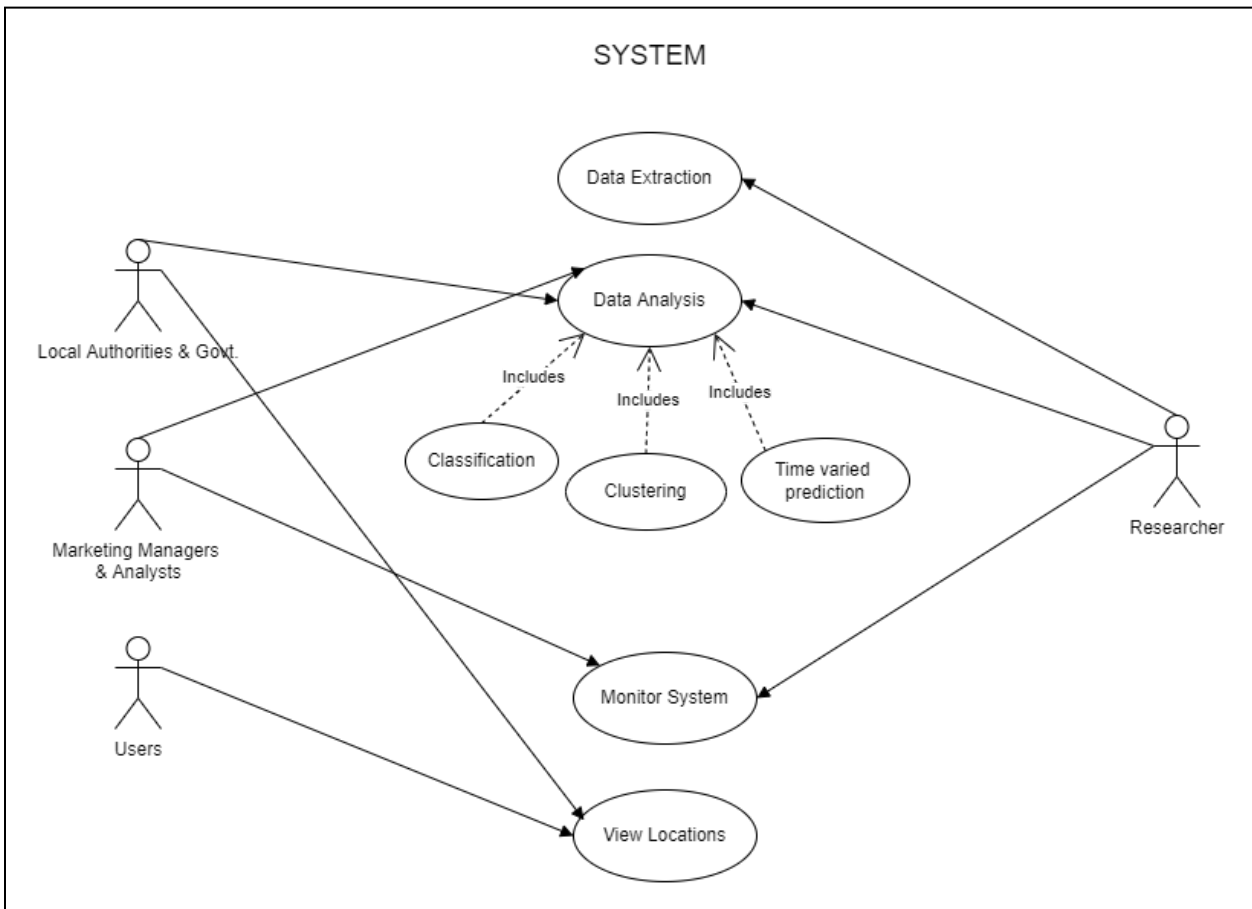
2 Overall Description

2.1 Product Perspective

The project makes use of the extensive geotagged images available on social media for data collection and develops a comprehensive review system with the help of image

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and text processing which can be passed on to the relevant people. It also structures the tourist demographic data for all locations in the vicinity and predicts tourism demands for various locations with the help of time variant data.



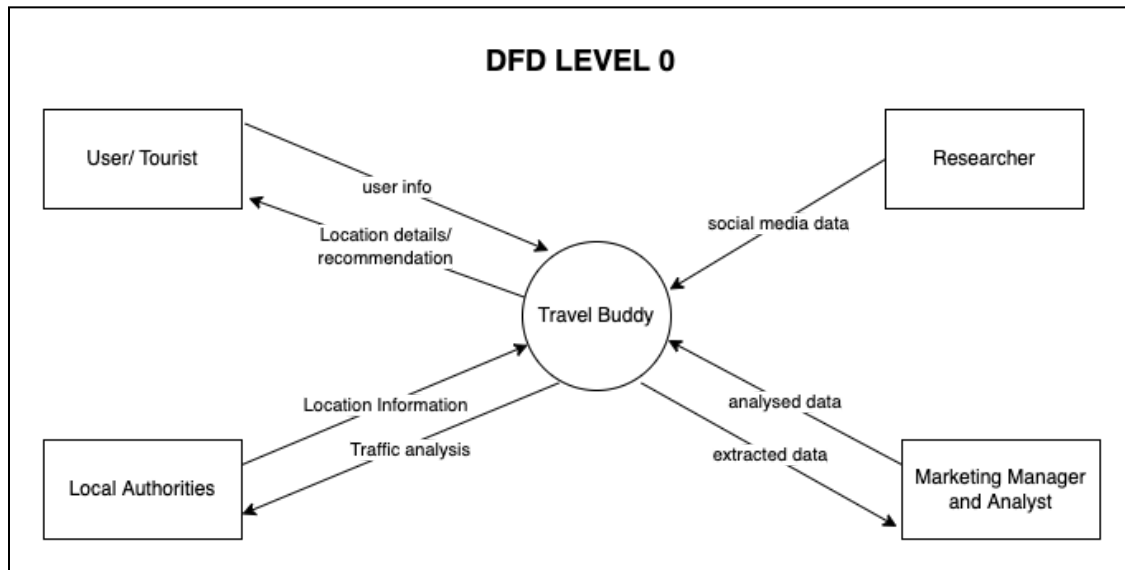
2.2 Product Functionality

- Social media images that are geotagged will be collected and analyzed to find recurring patterns.
- All the details about a location and any nearby locations will be consolidated and users can use the project to get specific directions to any of these locations or any nearby popular spots.
- Recommendations will also be done according to the user's travel history, time variant analysis and weather forecasting.
- Local authorities can update information about the tourism spots and based on the analysis of the tourism traffic, they can take appropriate measures.

DFD:



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2.3 Users and Characteristics

- **Users:** They travel and use the analysed data for making decisions.
- **Local Authorities and government:** There is constant communications between data analysts and the local authorities to be updated with the current data.

2.4 Operating Environment

- **Recommended browsers:** Chrome, Firefox, Safari, Edge and Brave.
- **Recommended Operating systems:** Windows, MacOS, IpadOS, iOS, wear OS, watchOS, Android and Linux.

2.5 Design and Implementation Constraints

- The system is limited by its operating server in terms of the maximum number of users and queries it can support at a given time.
- Isn't compatible with devices without GPS.
- Network Connectivity issues
- Requires Large RAM.

2.6 User Documentation

- The user manual will contain all the guidelines for handling software as well as FAQ section for reference.



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- Contact us & support center.
- Cultural differences.

2.7 Assumptions and Dependencies

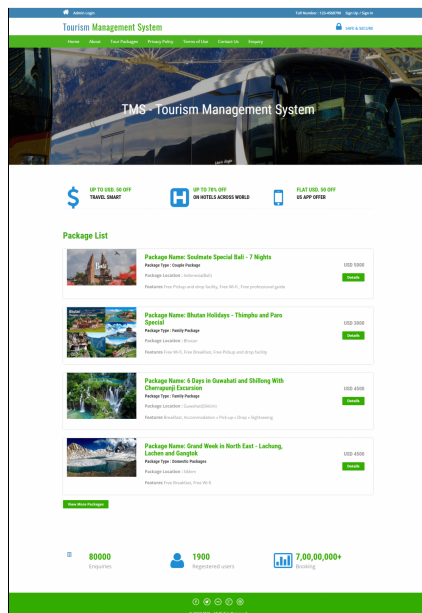
- We assume that the location mentioned is correct and has been actually visited by the tourist.
- We assume location views the same day for all years.
- The photo uploaded on social media is actually of a tourist place
- The database must store that the year mentioned by the tourist is correct without any discrepancies.
- We assume that the place mentioned in the image is are the in a database which is secured and should not be tampered by any unauthorised person.
- We assume that the geotags we get via third party API for are relevant and accurate.

3 Specific Requirements

3.1 External Interface Requirements

3.1.1 User Interfaces

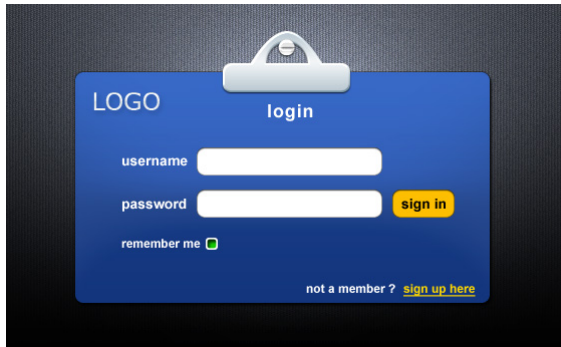
Landing Page: This will be the first page the users will see upon opening the webapp. It will give an introduction about our organization and will show the current trends in tourism locations.



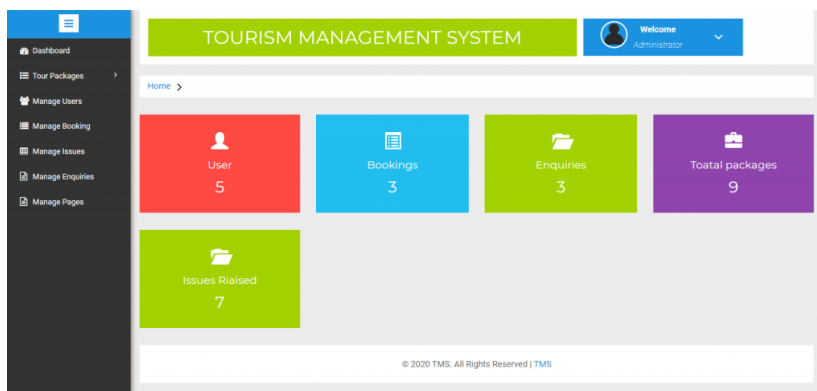


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Login Page
Signup Page



Dashboard: This page will open once the user has logged in. This will give an overview about the user profile and will show details about his past travels. There will be a navbar on the side that will have links for Search Page, Past Travels and Travel recommendations



Home Page: This is the first page on the dashboard.

Search Page: Here the user can search for locations as per their preferences.

Past Travels: This will show a list of the user's travel history.

Travel Analytics and Recommendations: This will have recommendations for the user based on the trained model and user's travel history.

Local Authority:



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Login Signup

Data Updation Page: This page is used by the local authorities to upload details about locations and to make any corrections in the uploaded data to remove any wrong data that might have been uploaded.

3.1.2 Hardware Interfaces

Server:

RAM: 8 GB

Storage: 2TB SSD:

Processor: Intel Pentium 4 processor or later that's SSE2 capable

GPU: Nvidia GTX 1050

User Device:

RAM: 500 MB

Storage: 4 GB Storage

GPS Sensor

3.1.3 Software Interfaces

Browsers: Chrome, Firefox, Safari, Edge and Brave.

Operating systems: Windows, MacOS, IpadOS, iOS, wear OS, watchOS, Android and Linux.

Tools: Google Colab, Jupyter Notebook

3.1.4 Communications Interfaces

- Minimum 40 Kbps Internet Speed to ensure lossless connectivity.



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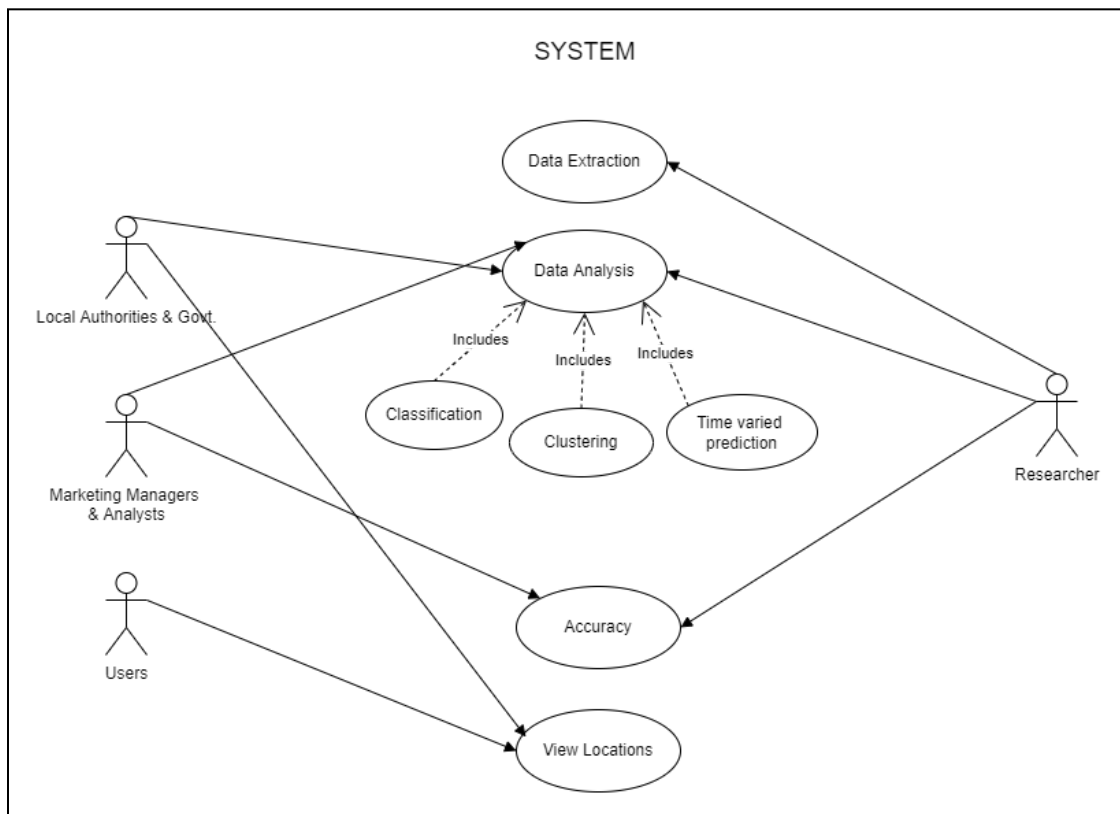
- HTTP protocols for servicing the requests and for transmission of data in JSON format.
- AES protocol will be used to encrypt the sensitive data being transmitted.

3.2 Functional Requirements

- **Login / Signup** : This functionality will be used by users to register as well as to login in the platform. All the sensitive credentials will be transmitted and stored in a secure manner.
- **Data Collection** : Geotagged images from social media channels will be collected and stored along with popular nearby tourist spots.
- **Bulletin Updation** : Local Authorities will be able to share live updates and details about spots.
- **Recommendation** : Based on travel history, weather forecasting and time varied data, locations will be recommended to the users.

3.3 Behaviour Requirements

3.3.1 Use Case View





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Actors and their user-scenarios:

- **Users** will have access to the deployed software and can give their choice of value as input to get the desired output.
- **Marketing Managers and Analysts** will check out the accuracy of the analyzed data, will form training and testing sets for models and then use the results for visualizing and drawing conclusions. They will need to be informed about any changes in the data that have occurred.
- **Local Authorities** will be the source for data extraction and accuracy checking.
- **Researchers** will perform multiple tasks.
 - They will research and extract data along with relevant information from various sources like the internet, past surveys and the data given by the local authorities and the government.
 - They will then carry out a detailed analysis on the gathered data using classification tools, clustering algorithms, etc.
 - They will then, along with marketing managers and analysts, check out the accuracy of the analyzed data, form training and testing sets for models and then use the results for visualizing and drawing conclusions.
 - They will need to be aware about any changes that have occurred in the system and might need to inform the concerned people.
 - They will also deploy and manage the deployed software.

4 Other Non-functional Requirements

4.1 Performance Requirements

- The analysis should be crystal clear.
- It should provide the desired locations and must be available when required.
- It should be able to extract data from social media platforms at frequent intervals.
- It should store the extracted data in the database so it could be retrieved in the future.
- It should recommend desirable and available locations.
- It should have support for an ample amount of concurrent users.
- Any bugs/queries should be resolved in 3 days.



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4.2 Safety and Security Requirements

- The analysis should be of tourist places. This is to ensure that the analysis is not used for inappropriate purposes.
- The extracted images should avoid having personal details of the people in them.
- The database should be secured against attacks of SQL injections and should be accessible only to the authorised person.
- User permission shall be taken to access local storage.
- Users' confidential data shall be saved in an encrypted manner.

4.3 Software Quality Attributes

- **RELIABLE** : Should have sufficient accuracy that the users can rely on it. It should meet client satisfaction standards and be able to gain and maintain their trust.
- **AVAILABILITY** : Whenever the need is there for the analysis it should be available. It should not provide misleading information when it is required the most and function seamlessly.
- **SECURE** : It should have security to ensure it is not tampered with and is not used for illegal purposes.
- **MAINTAINABILITY** : The analysis should be easily maintainable, the users should be able to add delete locations and should be able to update the report with ease at a later time.

5 Other Requirements

- Maintenance of the application.
- Updating new functionalities.
- Security of database.
- Frequent updation of data by researchers.

Appendix A – Data Dictionary

Field Name	Data Type	Field Size for display	Description	Example



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User_name	Text	15	Name of each customer	Lord Voldemort
Age	Integer	3	Age of the customer	75
Country_of_origin	Text	20	Country to which the customer belongs	India
Locations_visited	Text	50	Locations visited	Hogwarts
List_of_tourists	List	500	List of tourists	{ Harry Potter, Hermoine Granger, Ron Weasley}
Peak_time	Text	50	Peak time of attraction	May

Appendix B - Group Log

DATE	ACTORS	WORK DONE
23/04/2022	Dhruvi, Harvy, Junaid	Analysed Requirements
30/04/2022	Dhruvi, Harvy, Junaid	Prepared SRS



Experiment - 3

Date of Performance: 24/04/2022

Date of Submission: 23/04/2022

DIV: A

Batch: A4

Team Members:

Name:	SAP ID:
Dhruvi Jodhawat	60004190032
Harvy Gandhi	60004190043
Junaid Girkar	60004190057

Aim: Identify scenarios & develop UML Use case and Class Diagram for the project

Theory:

Use case Diagram

A UML use case diagram is the primary form of system/software requirements for a new software program underdeveloped. Use cases specify the expected behaviour (what), and not the exact method of making it happen (how). Use cases once specified can be denoted both textual and visual representation (i.e., use case diagram). A key concept of use case modelling is that it helps us design a system from the end user's perspective. It is an effective technique for communicating system behaviour in the user's terms by specifying all externally visible system behaviour. Use cases represent only the functional requirements of a system. Other requirements such as business rules, quality of service requirements, and implementation constraints must be represented separately, again, with other UML diagrams.

Use case diagrams are typically developed in the early stage of development and people often apply use case modelling for the following purposes:

- Specify the context of a system.
- Capture the requirements of a system.
- Validate a system architecture.
- Drive implementation and generate test cases.
- Developed by analysts together with domain experts.



Class Diagram

In software engineering, a class diagram in the Unified Modelling Language (**UML**) is a **type of static structure diagram** that describes the structure of a system by showing the system's classes, their attributes, operations (or methods), and the relationships among objects.

Purpose of Class Diagrams

1. Shows static structure of classifiers in a system.
2. Diagram provides a basic notation for other structure diagrams prescribed by UML.
3. Helpful for developers and other team members too
4. Business Analysts can use class diagrams to model systems from a business perspective.

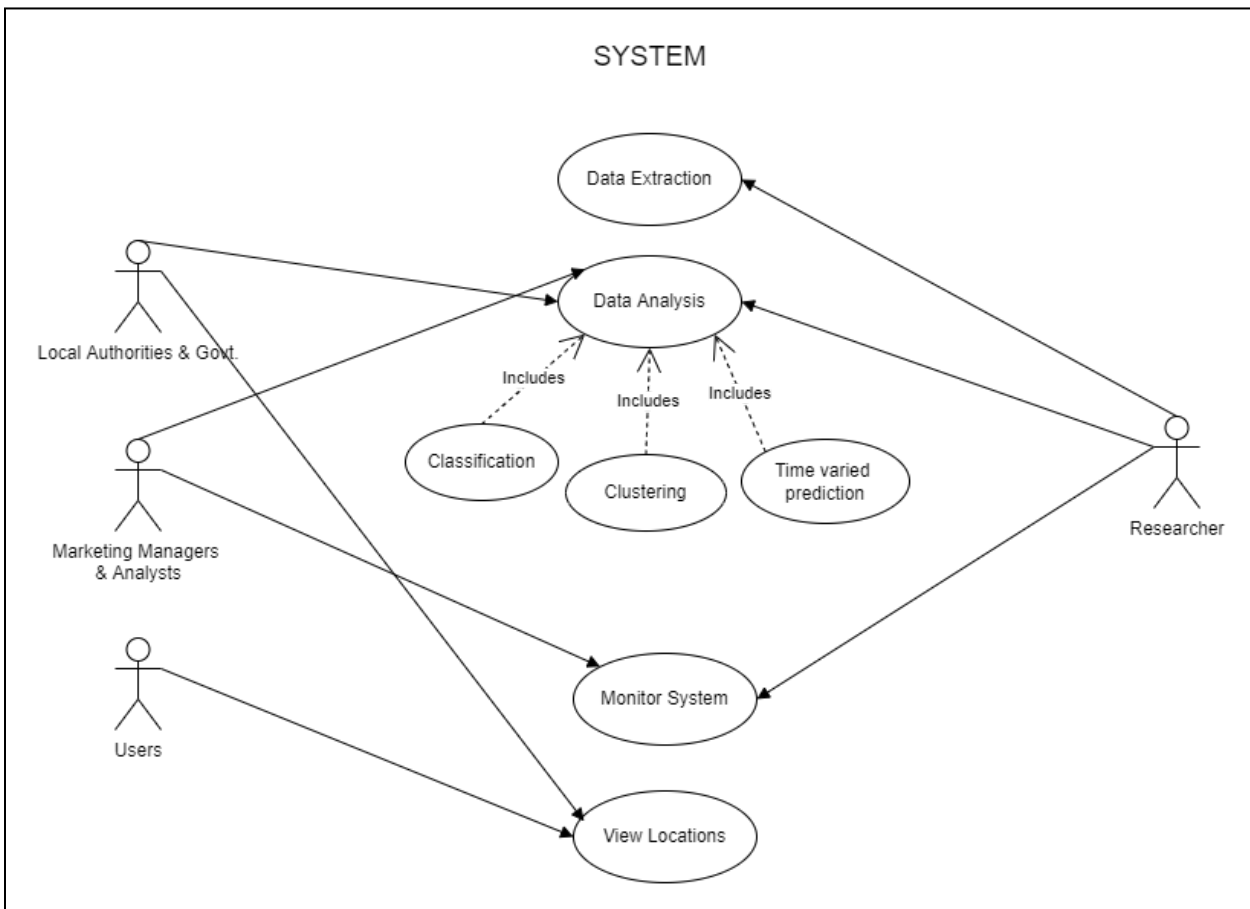
Class diagram shows a collection of classes, interfaces, associations, collaborations, and constraints. It is also known as a structural diagram.

The class diagrams are widely used in the modelling of object-oriented systems because they are the only UML diagrams, which can be mapped directly with object-oriented languages.



FOR OUR PROJECT:

Use Case Diagram:



Theory:

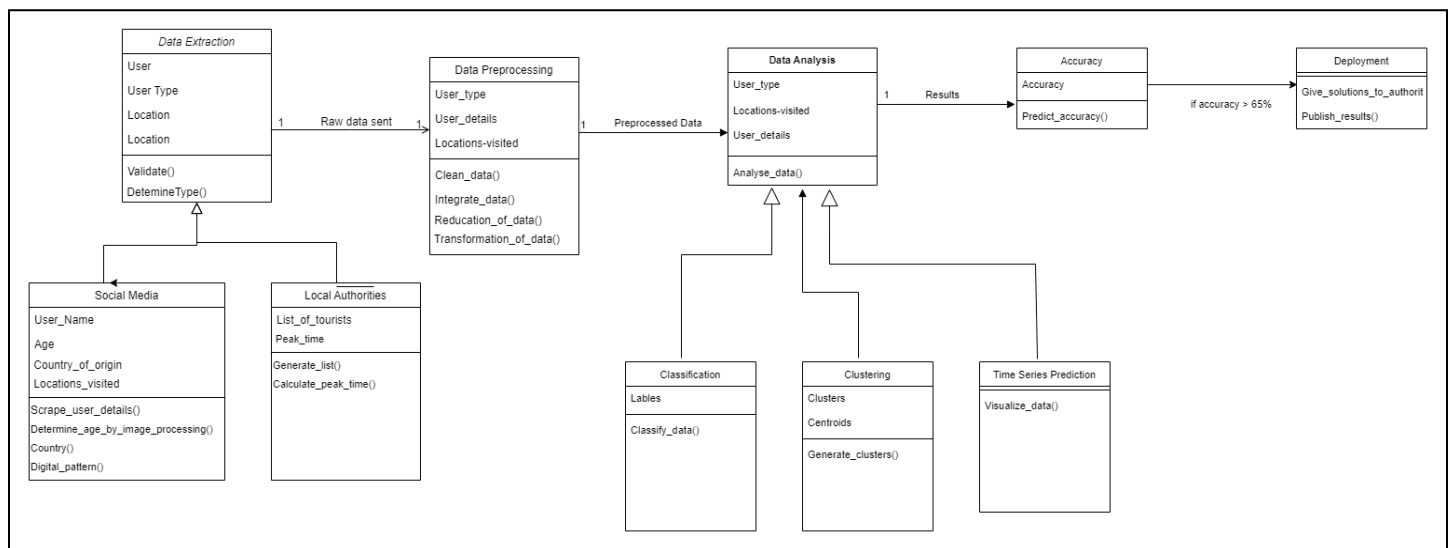
Actors and their user-scenarios:

- **Users** will have access to the deployed software and can give their choice of value as input to get the desired output.
- **Marketing Managers and Analysts** will check out the accuracy of the analyzed data, will form training and testing sets for models and then use the results for visualizing and drawing conclusions. They will need to be informed about any changes in the data that have occurred.
- **Local Authorities** will be the source for data extraction and accuracy checking.
- **Researchers** will perform multiple tasks.



- ◆ They will research and extract data along with relevant information from various sources like the internet, past surveys and the data given by the local authorities and the government.
- ◆ They will then carry out a detailed analysis on the gathered data using classification tools, clustering algorithms, etc.
- ◆ They will then, along with marketing managers and analysts, check out the accuracy of the analyzed data, form training and testing sets for models and then use the results for visualizing and drawing conclusions.
- ◆ They will need to be aware about any changes that have occurred in the system and might need to inform the concerned people.
- ◆ They will also deploy and manage the deployed software.

Class Diagram:



● Class - Data Extraction

Attributes:

- User
- Usertype
- Location

Operations:

- Validate()
- DetermineType()



- **Class - Social Media**

Attributes:

- User_name
- Age
- Country_of_origin
- Locations_visited

Operations:

- Determine_age_by_image_processing()
- Display_pattern()

- **Class - Local Authorities**

Attributes:

- List_of_tourists
- Peak_time

Operations:

- Generate_list()
- Calculate_peak_time()

- **Class - Data preprocessing**

Attributes:

- User_type
- User_details
- Locations_visited

Operations:

- Clean_data()
- Integrate_data()

- **Class - Data Analysis**

Attributes:

- User_type
- User_details
- Locations_visited

Operations:

- Analyse_data()

- **Class - Classification**

Attributes:

- Labels

Operations:



- Classify_data()
- **Class - Clustering**
Attributes:
 - Clusters
 - Centroids**Operations:**
 - Generate_clusters
- **Class - Time Series Prediction**
Operations:
 - Visualize_data()
- **Class - Accuracy**
Attributes:
 - Accuracy**Operations:**
 - Predict_accuracy()
- **Class - Deployment**
Operations:
 - Give_soln_to_authorities
 - Publish_results

Conclusion: We learnt about UML Use-Case Diagrams and Class Diagrams and have created them for our tourism analysis project.



Experiment - 4

Date of Performance: 12/05/2022

Date of Submission:

DIV: A

Batch: A4

Team Members:

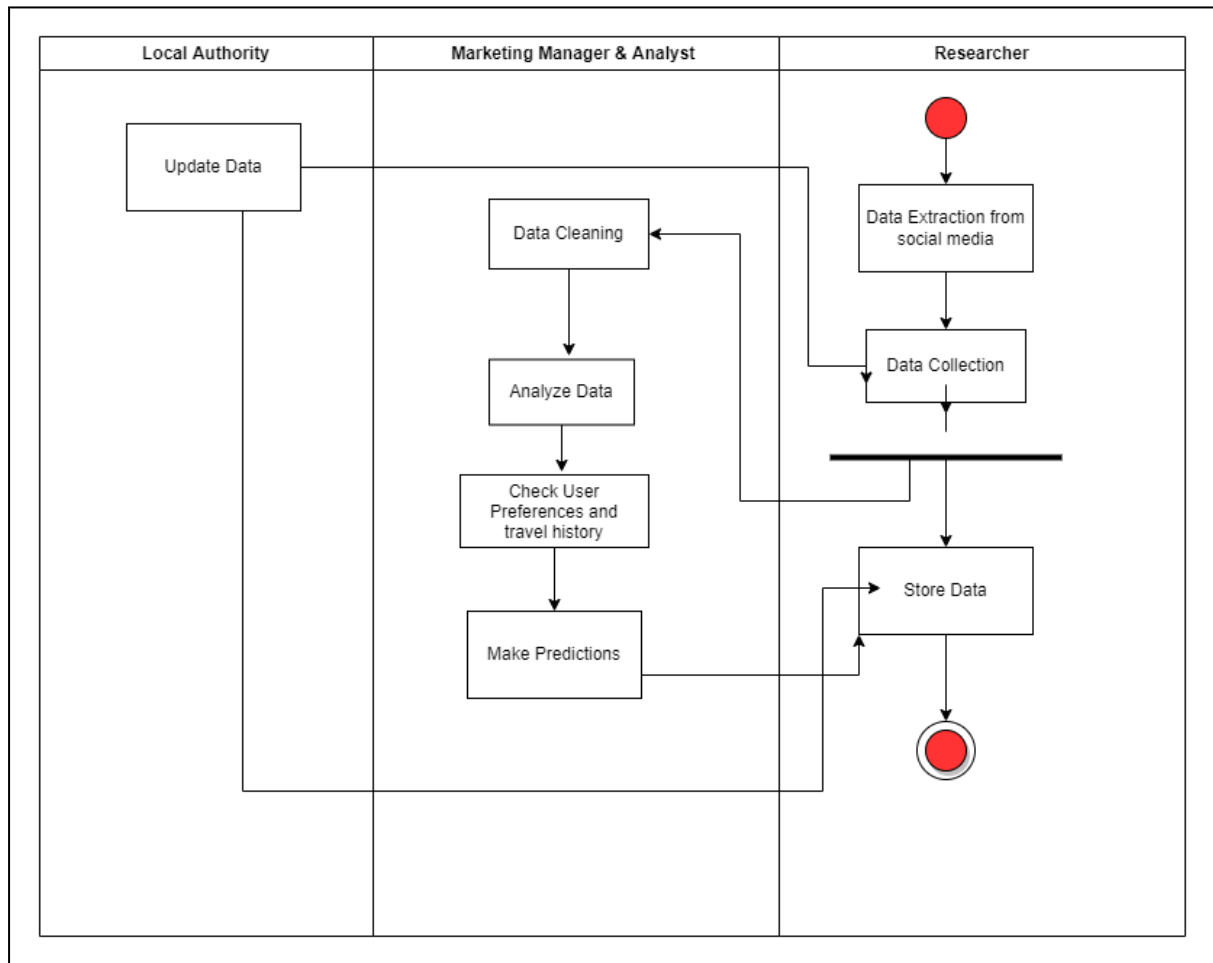
Name:	SAP ID:
Dhruvi Jodhawat	60004190032
Harvy Gandhi	60004190043
Junaid Girkar	60004190057

Aim: Develop Activity diagram and DFD (up to 2 levels) for the project.

Theory:

Activity Diagram:

A UML activity diagram depicts the dynamic behavior of a system or part of a system through the flow of control between actions that the system performs. It is similar to a flowchart except that an activity diagram can show concurrent flows. The main component of an activity diagram is an action node, represented by a rounded rectangle, which corresponds to a task performed by the software system. Arrows from one action node to another indicate the flow of control. That is, an arrow between two action nodes means that after the first action is complete the second action begins. A solid black dot forms the initial node that indicates the starting point of the activity. A black dot surrounded by a black circle is the final node indicating the end of the activity. A fork represents the separation of activities into two or more concurrent activities. It is drawn as a horizontal black bar with one arrow pointing to it and two or more arrows pointing out from it. Each outgoing arrow represents a flow of control that can be executed concurrently with the flows corresponding to the other outgoing arrows. These concurrent activities can be performed on a computer using different threads or even using different computers

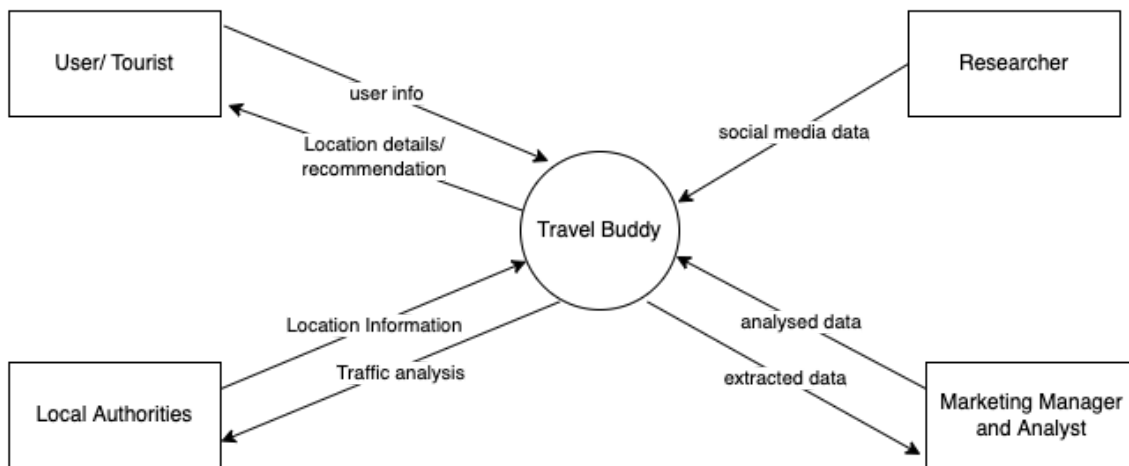


Data Flow Diagrams:

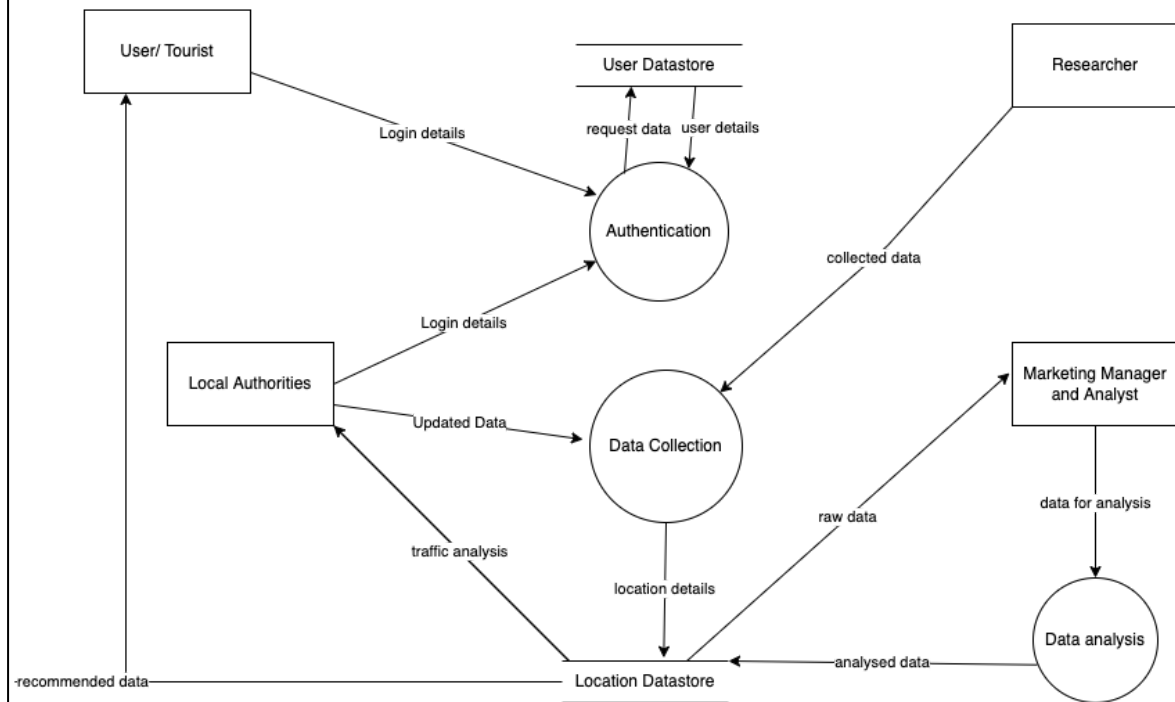
The data flow diagram enables you to develop models of the information domain and functional domain. As the DFD is refined into greater levels of detail, you perform an implicit functional decomposition of the system. At the same time, the DFD refinement results in a corresponding refinement of data as it moves through the processes that embody the application.

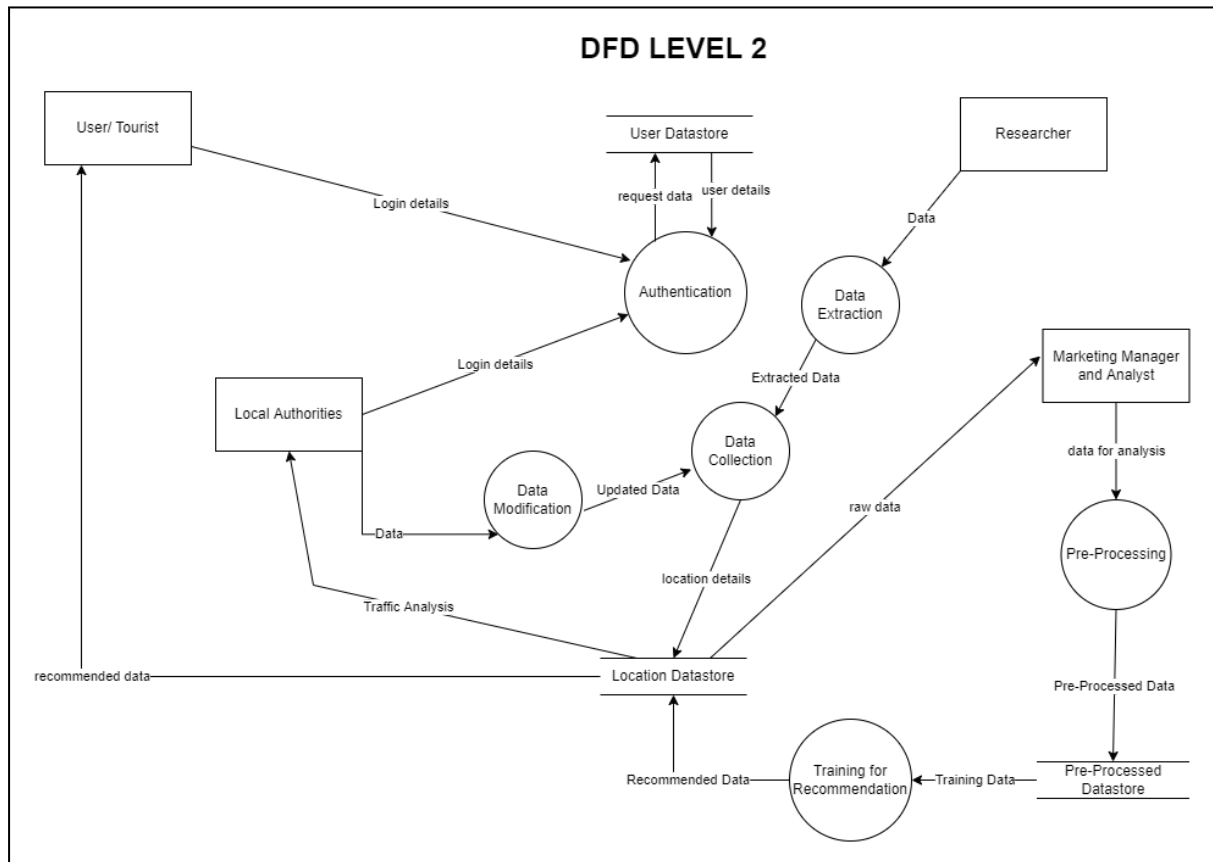


DFD LEVEL 0



DFD LEVEL 1





Conclusion:

Thus, we are able to draw a Swim lane diagram for our case study. We are also able to depict the flow of data through various processes through different level DFDs.



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Experiment No. 5

DIV: A

Batch: A4

Team Members:

Name:	SAP ID:
Dhruvi Jodhawat	60004190032
Harvy Gandhi	60004190043
Junaid Girkar	60004190057

Aim: Estimate effort and cost required using FP/COCOMO for the project. Create WBS and Gantt Chart for the same. Use the PM Tool to depict a project plan.

Theory:

Work Breakdown Structure:

Work Breakdown Statement

A work breakdown statement (WBS) is a categorized list of tasks with an estimate of resources required to complete the task. An example WBS appears below.

WBS #	Task Description	Est Person -Hrs	Who	Resources	M&S
5.1	Extract Data from Social Media sites	168	Researcher	Extraction Tools	\$300
5.2	Analyze the extracted data and detect patterns	120	Marketing Manager and Analyst	Excel, Tableau	\$100
5.3	Update the data for any inaccuracies	48	Local Authorities	Excel, Tableau	\$100
5.4	Testing the functionalities	168	Marketing Manager and Analyst	Testing Tools	\$200
5.5	Project Deployment	72	Marketing Manager and Analyst	Servers	\$500



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5.6	Maintain data pipelines	4320	Marketing Manager and Analyst	Servers	\$1000
-----	-------------------------	------	-------------------------------	---------	--------

(M&S = Materials & Supplies)

Gantt Chart Basics

Gantt charts are a project planning tool that can be used to represent the timing of tasks required to complete a project. Because Gantt charts are simple to understand and easy to construct, they are used by most project managers for all but the most complex projects.

In a Gantt chart, each task takes up one row. Dates run along the top in increments of days, weeks or months, depending on the total length of the project. The expected time for each task is represented by a horizontal bar whose left end marks the expected beginning of the task and whose right end marks the expected completion date. Tasks may run sequentially, in parallel or overlapping.

As the project progresses, the chart is updated by filling in the bars to a length proportional to the fraction of work that has been accomplished on the task. This way, one can get a quick reading of project progress by drawing a vertical line through the chart at the current date. Completed tasks lie to the left of the line and are completely filled in. Current tasks cross the line and are behind schedule if their filled-in section is to the left of the line and ahead of schedule if the filled-in section stops to the right of the line. Future tasks lie completely to the right of the line.

In constructing a Gantt chart, keep the tasks to a manageable number (no more than 15 or 20) so that the chart fits on a single page. More complex projects may require subordinate charts which detail the timing of all the subtasks which make up one of the main tasks. For team projects, it often helps to have an additional column containing numbers or initials which identify who on the team is responsible for the task.

Often the project has important events which you would like to appear on the project timeline, but which are not tasks. For example, you may wish to highlight when a prototype is complete or the date of a design review. You enter these on a Gantt chart as "milestone" events and mark them with a special symbol, often an upside-down triangle.

Gantt Chart Example from <http://www.criticaltools.com/projwbs.htm>

Practical:

For Estimation

1. Use the FP / COCOMO model to estimate Effort and subsequently Cost required to develop the project.



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2. Show all the tables and steps of the estimation model.

Cost estimation

- E.I.: User Credentials, Local Authorities Credentials, Updation Data, Researcher Collected Data.
- E.O.: Location Details, Recommended Locations, Traffic Analysis
- E.Q.: Social Media Websites.
- I.L.F.: user datastore, location datastore, pre-processed datastore, recommender system
- E.I.F: -

Information Domain Value	Count	Simple	Average	Complex	Total
External inputs	4	3	<u>4</u>	8	4*4=16
External Outputs	3	4	<u>6</u>	9	6*3=18
External enquiry	1	2	<u>3</u>	6	3*1=3
Internal Logical Files	4	3	<u>5</u>	9	7*4=20
External interface files	0	4	<u>7</u>	10	7*0=0
					Count-total = 57

The Fi (i = 1 to 14) are value adjustment factors (VAF) based on responses to the following questions:

1. Does the system require reliable backup and recovery?

○ 4 - It is essential to have reliable backup and recovery for important modules like transaction confirmation.



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- 2. Are specialized data communications required to transfer information to or from the application?**
 - 3 – Application needs to be “near-realtime” .
- 3. Are there distributed processing functions?**
 - 1 - Yes
- 4. Is performance critical?**
 - 4 - Performance is always critical
- 5. Will the system run in an existing, heavily utilized operational environment?**
 - 5 - No, the project is not based on a pre-existing system.
- 6. Does the system require online data entry?**
 - 4 - Yes
- 7. Does the online data entry require the input transaction to be built over multiple screens or operations?**
 - 3 - Yes, updates of data by local authorities will be built over multiple screens.
- 8. Are the ILFs updated online?**
 - 5
- 9. Are the inputs, outputs, files, or inquiries complex?**
 - 3 - Yes
- 10. Is the internal processing complex?**
 - 4 - Yes
- 11. Is the code designed to be reusable?**
 - 4 - Yes as we are following the best coding practices.
- 12. Are conversion and installation included in the design?**
 - 3
- 13. Is the system designed for multiple installations in different organizations?**
 - 0 - No
- 14. Is the application designed to facilitate change and ease of use by the user**



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- 4 - Yes

$$\Sigma(F_i) = 47$$

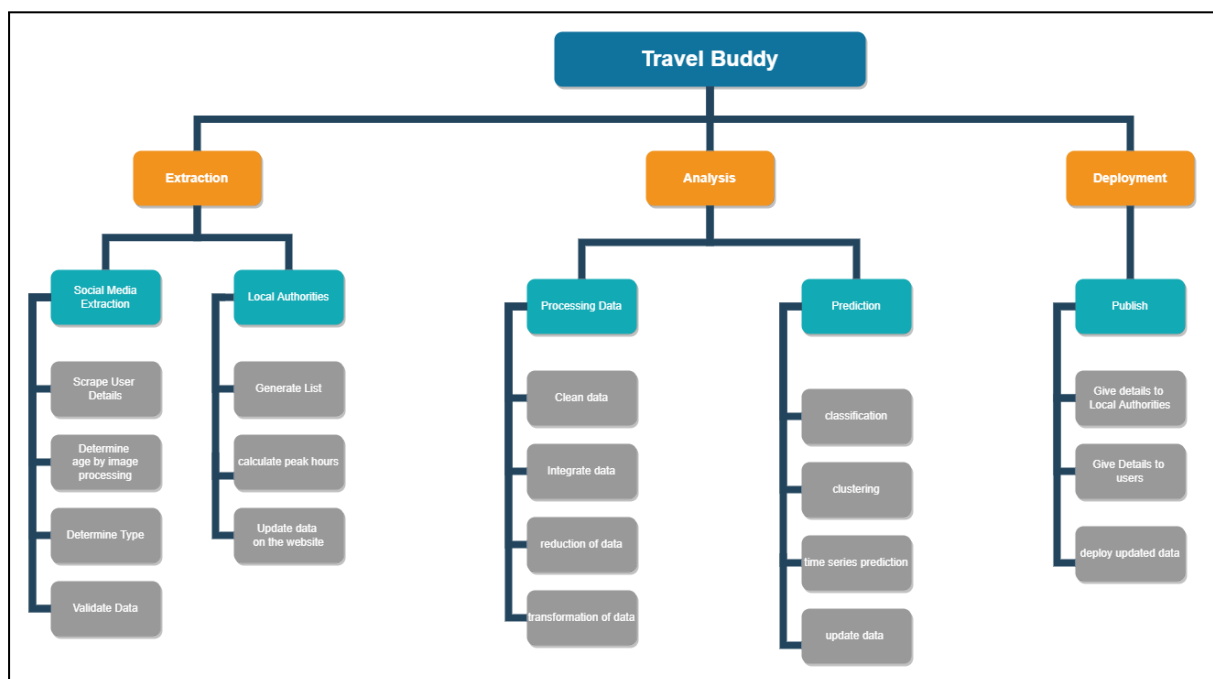
The estimated number of FP is derived:

$$FP(\text{estimated}) = \text{count-total} * [0.65 + 0.01 * \Sigma(F_i)]$$

$$= 57 * [0.65 + 0.01 * 47]$$

= 63.84 function points.

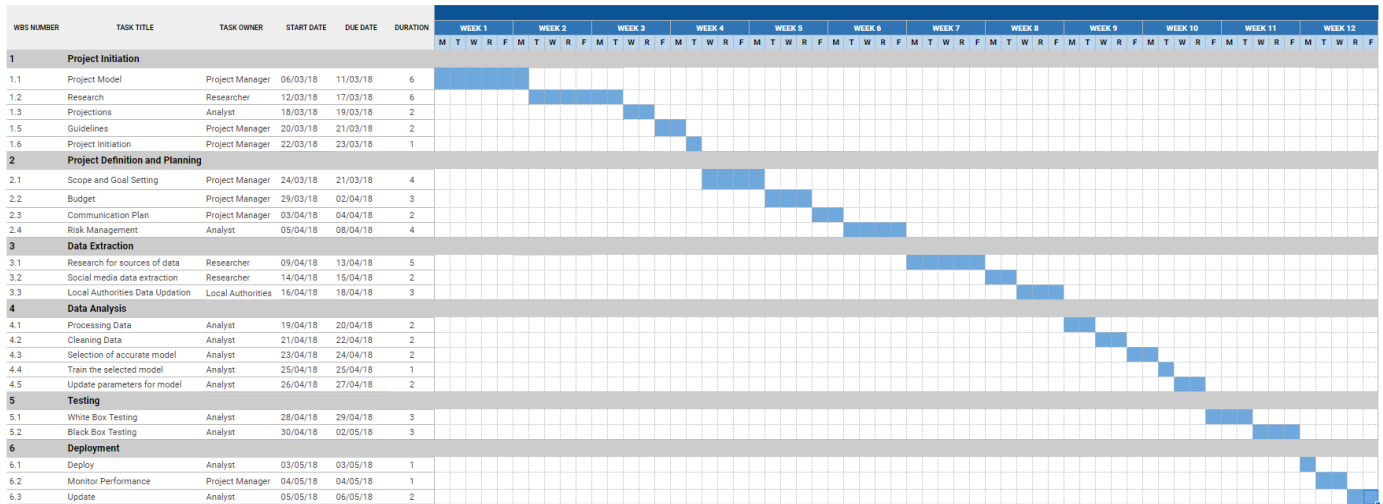
For WBS and Gantt Chart



1. Create different tasks of your project depending on the process model that you have selected for the same.
2. Create a WBS or Task network diagram depicting clearly which tasks can happen in parallel and sequential.
3. Identify team members and allot them to the task
4. Based on the effort estimated in person months, distribute the effort on a 40-20-40 % basis.

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5. Prepare a Gantt chart using any PM tool



Conclusion:

Thus, we are able to estimate the effort required for our project and also create a Gantt Chart.



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Experiment No. 6

Date of Performance: 21/05/2022

Date of Submission:

DIV: A

Batch: A4

Team Members:

Name:	SAP ID:
Dhruvi Jodhawat	60004190032
Harvy Gandhi	60004190043
Junaid Girkar	60004190057

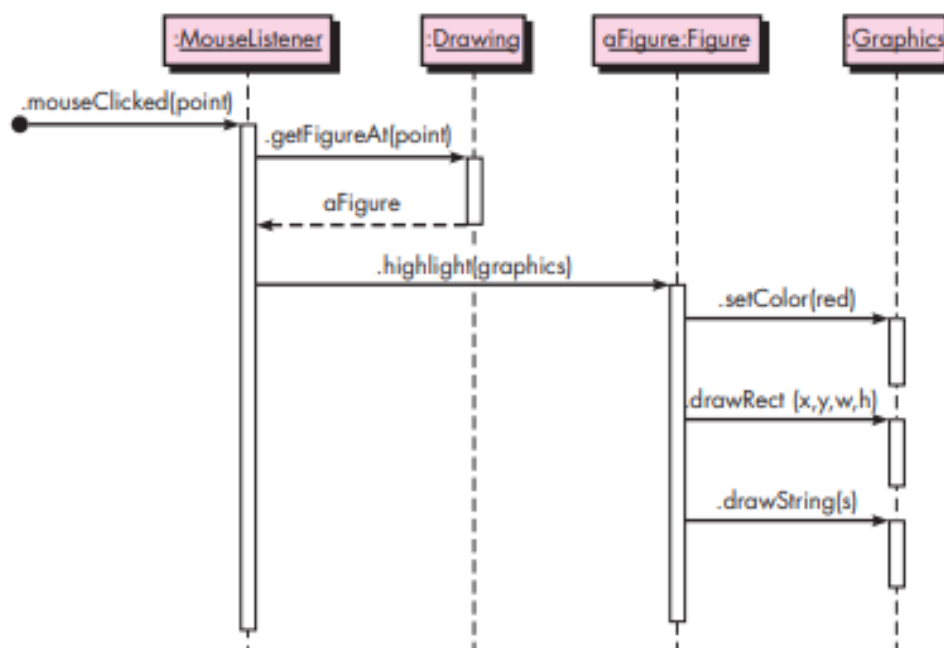
Aim: Develop Sequence and Collaboration diagram for the project.

Theory:

Sequence Diagram:

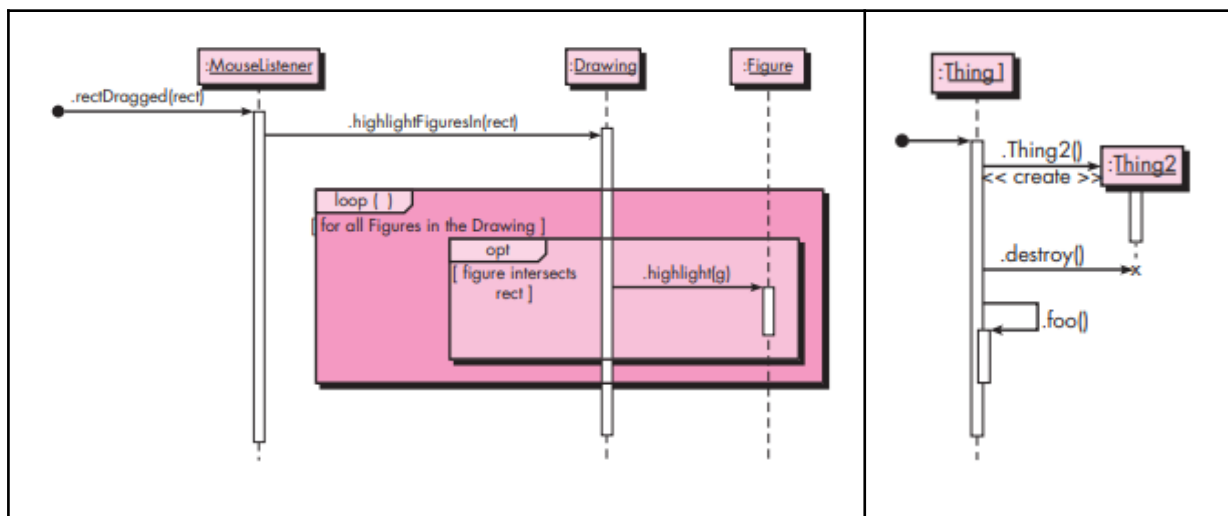
A sequence diagram is used to show the dynamic communications between objects during execution of a task. It shows the temporal order in which messages are sent between the objects to accomplish that task. One might use a sequence diagram to show the interactions in one use case or in one scenario of a software system.

A sequence diagram shows method calls using horizontal arrows from the caller to the callee, labeled with the method name and optionally including its parameters, their types, and the return type.



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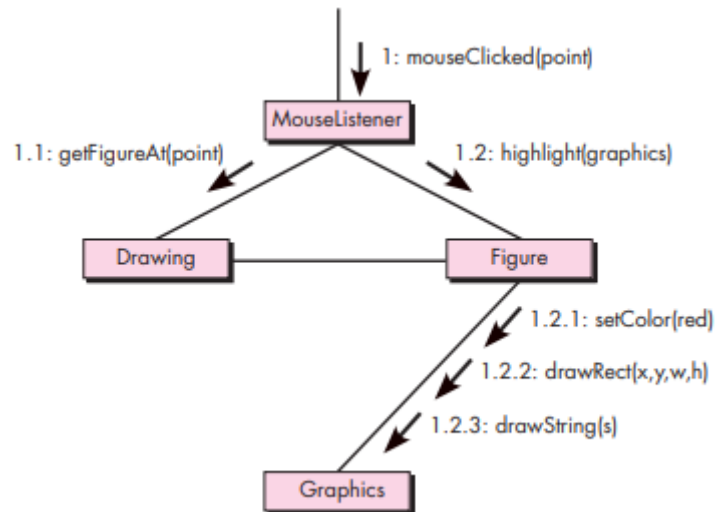
The figure shows a sequence diagram for a drawing program. The diagram shows the steps involved in highlighting a figure in a drawing when it has been clicked. Each box in the row at the top of the diagram usually corresponds to an object, although it is possible to have the boxes model other things, such as classes. If the box represents an object (as is the case in all our examples), then inside the box you can optionally state the type of the object preceded by the colon. You can also precede the colon and type by a name for the object, as shown in the third box in Figure. Below each box there is a dashed line called the lifeline of the object. The vertical axis in the sequence diagram corresponds to time, with time increasing as you move downward. The diagram in Figure is very straightforward and contains no conditionals or loops. If logical control structures are required, it is probably best to draw a separate sequence diagram for each case. That is, if the message flow can take two different paths depending on a condition, then draw two separate sequence diagrams, one for each possibility



Collaboration (communication) Diagrams:

A collaboration diagram, illustrated in Figure below, displays the same actions shown in the sequence diagram in Figure.

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In a collaboration diagram the interacting objects are represented by rectangles. Associations between objects are represented by lines connecting the rectangles. There is typically an incoming arrow to one object in the diagram that starts the sequence of message passing. That arrow is labeled with a number and a message name. If the incoming message is labeled with the number 1 and if it causes the receiving object to invoke other messages on other objects, then those messages are represented by arrows from the sender to the receiver along an association line and are given numbers 1.1, 1.2, and so forth, in the order they are called. If those messages in turn invoke other messages, another decimal point and number are added to the number labeling these messages, to indicate further nesting of the message passing. In Figure, you see that the `mouseClicked` message invokes the methods `getFigureAt()` and then `highlight()`. The `highlight()` message invokes three other messages: `setColor()`, `drawRect()`, and `drawstring()`. The numbering in each label shows the nesting as well as the sequential nature of each message.

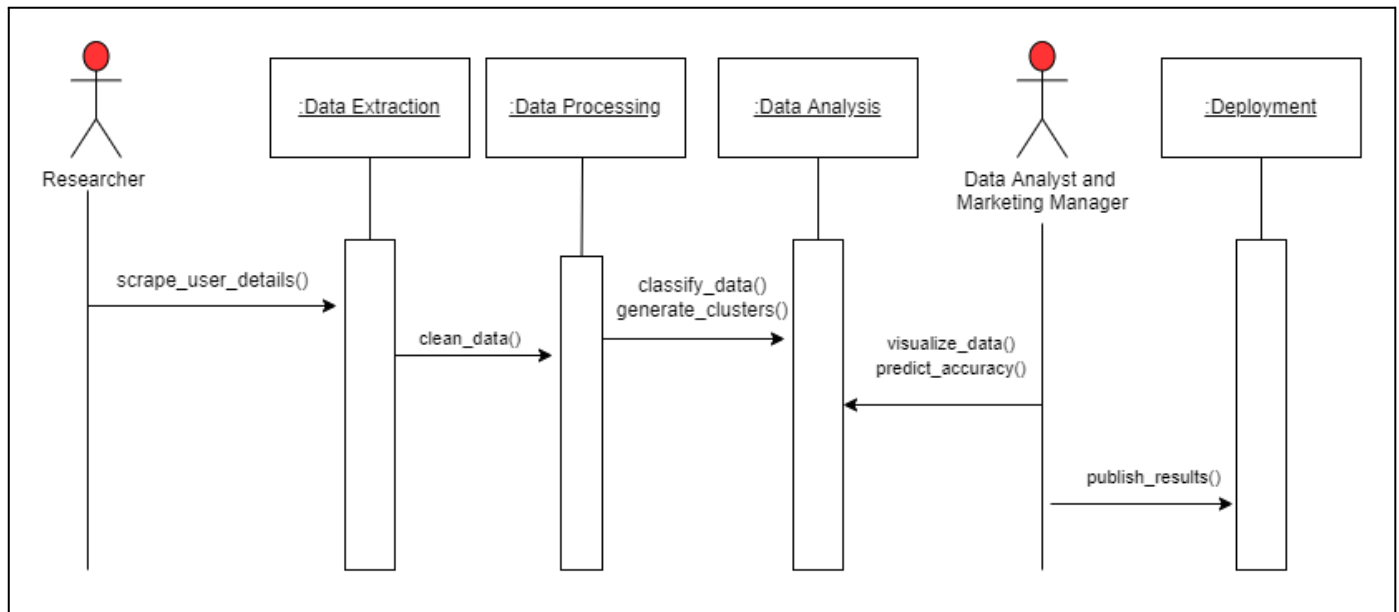
Practical:

For Sequence diagram

1. Identify any functionality involving more than two objects of your case study from Expt 3.
2. Identify the communication between the actors. Represent the same in the form of messages in the sequence diagram.



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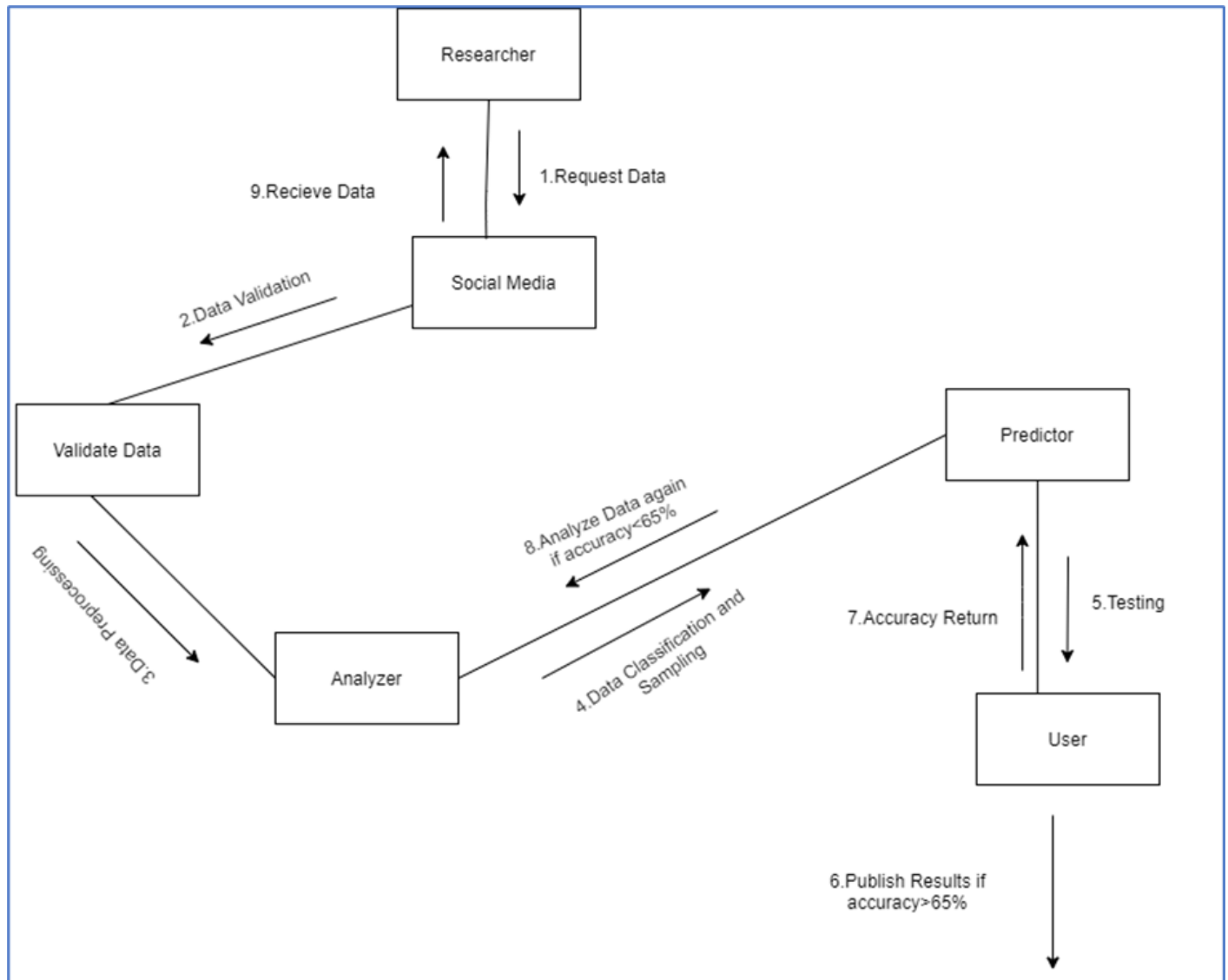


For Collaboration diagram

1. Convert the Sequence diagram for the same functionality into Collaboration diagram using respective notations



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Conclusion:

Thus, we are able to draw Sequence and Collaboration diagrams for functionality of our case study.

Project Name	Travel Buddy			
Reference Document	Project Functional Requirement Specification , Version 1			
Created by		Dhruvi, Harvy, Junaid		
Date of creation	29-May-22			
Date of review	30-May-22			
Test scenario ID	ent- reference docum	Test scenario description	Impor- tance	No. of test cases
TC_L	1.1	Validating the user	High	2
TC_D	1.2	Validating the form fields of local authorities.	High	2
TC_R	1.3	Validating if the recommended location exists.	Medium	2

	Project Name	Travel Buddy				
	Reference Document	Software Requirement Specification , Version 1				
	Created by	Dhruvi, Harvy, Junaid				
	Date of creation	29-May-22				
	Date of review	30-May-22				
Test case ID	Test Objective	Precondition	Steps:	Test data	Expected result	Post-condition
TC_L_1	Successful User/ Local Authority login to Application	1. A valid User account to login to be available 2. Application run on a compatible browser	1. In the login Panel, enter the username	"A valid username" eg : abc@gmail.com	The user is logged in successfully..	For first time users personal information is displayed.
			2. Enter the Password for the User account in the password field	"A valid Password" eg : *****		
			3. Click "Login" button			
TC_L_2	Error message on unsuccessful login to portal	1. A valid User account to login to be available 2. Application run on a compatible browser	1. In the login Panel, enter the username	"A valid username"	An Error message is displayed and the user is not logged in to the portal. <InvalidPassword>	
			2. Enter the Password for the User account in the password field	"A invalid Password"		
			3. Click "Login"			
TC_D_1	Data format of the fields for data uploading by local authorities is valid	1. Application run on a compatible browser 2. User is a local authority	Open data updation form			
			Fill the updated details	"Updated Location Details", "Time of updation"	Data format of all the form fields is valid	
			Submit the form		Successful submission	Location details will be updated
TC_D_1	Data format of the fields for data uploading by local authorities is invalid	1. Application run on a compatible browser 2. User is a local authority	Open data updation form			
			Fill the updated details	"A invalid form"	Data format of all the form fields is invalid and error message <InvalidFormFields> is displayed	
			Submit the form		Unsuccessful submission	Redirected to the form
TC_R_1	Check if recommendation is null	1. Application run on a compatible browser.	1. User Login			

		2. User has an account	2. System receives user travel history	"Null travel history"	No data for analysis and recommendation provided	
		3. User has no travel history	3. Sends recommendation		No recommendation is provided to user	Redirected to "Top Recommendations" page
TC_R_2	if location in recommendation exists and is valid	1. Application run on a compatible browser.	1. User Login			
		2. User has an account	2. System receives user travel history	"Travel history"	Data for analysis and recommendation provided	
		3. User has travel history	3. Sends recommendation	"Valid location"	Recommendation is provided to user	
		4. Recommendation is provided			"Recommended location exists and is valid"	Redirected to the location page



Experiment No. 8

Date of Performance: 30/05/2022

Date of Submission:

DIV: A

Batch: A4

Team Members:

Name:	SAP ID:
Dhruvi Jodhawat	60004190032
Harvy Gandhi	60004190043
Junaid Girkar	60004190057

Aim: To create a RMMM plan: Create risk assessment template for a case study

Performance:

1. Identify Risks

a. Refer to the Risk Identification Checklist to be identify the risk

i. Business Impact Risks

1.Late Delivery:

- Description: Due to multiple testing stages, unprecedented challenges and certain failures we might not be able to meet the scheduled deadlines, thus our project would go off schedule.
- Probability: 30%
- Impact: 1
- Mitigation: Build a timeline to ensure all workers are working in adherence to that time line, prioritize tasks and divide work force and resources efficiently.
- Monitoring: Use metrics to evaluate work completed every day, make projections to find out if we are on schedule or off. Ensuring tasks are completed in stipulated time before meeting.
- Management: If we are found to be off schedule, make a new schedule, prioritize tasks, divide the work force in a revised manner, a lot people to work on incomplete tasks and others to develop the upcoming planned features.



2. Increase in Project Size:

- Description: With every meeting, the changes suggested and additional features to be implemented could result in a large and complex project.
- Probability: 10%
- Impact: 1
- Mitigation: Prepare a starting plan accounting for all additional features that could be implemented in the near future, make a project size estimation keeping in mind all features.
- Monitoring: With every meeting, keep record of new features that have to be added and divide the work force, one that focuses on the new features while the remaining can continue to work on the existing features.
- Management: If already found that the project has become very large and complex, get an additional work force to ensure we can meet the deadline on time and at the same time we can implement all features.

ii. Technical Issues:

1. Poor data pre-processing:

- Description: In case of faulty data pre-processing some outliers may be left back. Model will not be able to achieve desired accuracy and the whole project will fail.
- Probability: 20%
- Impact: 2
- Mitigation: Ensure data is pre-processed properly, check and recheck to make sure data is free from noise and outliers.
- Monitoring: Descriptive Data analysis will show in case any outliers are left back or if there is any noise. In case of such a scenario, refine data immediately.
- Management: During training of the model if we encounter abnormalities, immediately stop training revisit the data set and find discrepancies that might have caused the anomalies

iii. Development Environment Risks

1. Incompetent Team Members:

- Description: Team members might not be up to date with new technologies and are lethargic
- Probability: 30%
- Impact: 4



- Mitigation: Ensure to pick the best team members
- Monitoring: Ask the team members to report weekly about their progress and encourage them to learn new technologies.
- Management: Try to see if a new team can be formed if the current team members are not willing to improve.

2. Prepare Risk Table by identifying potential risks and categorizing their impacts as follows

Impact Values:

- 1 – Catastrophic
- 2 – Critical
- 3 – Marginal
- 4 – Negligible

Risk Table

Risks	Category	Probability	Impact
Insufficient Data	TR	70%	1
Late Delivery	BU	30%	1
Increase in Project Size	PS	10%	1
Technology will not Meet Expectations	TR	25%	1
End Users Resist System	BU	20%	1
Changes in Requirements	PS	20%	2
Poor Data Pre-Processing	PR	20%	2
Lack of Database Stability	TI	40%	2
Poor Quality Documentation	BU	35%	2
Deviation from Software Engineering Standards	PI	10%	3
Poor Comments in Code	TI	20%	4
Poor quality members in team	SE	30%	4

3. Create a Risk Mitigation, Monitoring and Management plan for the Risks identified in the Risk Table

RMMM plan



RISK INFORMATION SHEET			
RISK ID: P01-82	Date: 25/05/18	Prob: 80%	Impact: High
<p>Description:</p> <p>Due to insufficient or false data available online, many users are facing problems due to inaccurate recommendations.</p>			
<p>Refinement/context:</p> <p>Sub Condition 1: People are not geotagging or geotagging incorrect locations in their social media images.</p> <p>Sub Condition 2: Local Authorities are not correcting any inaccuracies in the data extracted from the internet.</p> <p>Sub Condition 3: People are not publicly posting images over the internet.</p>			
<p>Mitigation/monitoring:</p> <ol style="list-style-type: none">1. Image analysis and prediction based on location image, geo-tagging based on image.2. Getting regular updates from local authorities by contacting them regularly.3. Finding alternative social media sources or encouraging people to post images via campaigns or travel advertisements.			
<p>Management/contingency plan/trigger:</p> <ol style="list-style-type: none">1. Purchase data from online sources.2. Get into a profit-sharing agreement with the local authorities based on the quantity if data is updated.3. Get into a profit-sharing agreement with travel influencers.			
<p>Current status:</p> <p>30/05/22: Mitigation steps initiated</p>			
Originator: Junaid Girkar		Assigned: Harvy Gandhi	



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Experiment No. 9

DIV: A

Batch: A4

Team Members:

Name:	SAP ID:
Dhruvi Jodhawat	60004190032
Harvy Gandhi	60004190043
Junaid Girkar	60004190057

Aim: Study of Configuration Management using GitHub

Theory:

Git is a distributed revision control and source code management system with an emphasis on speed. Git was initially designed and developed by Linus Torvalds for Linux kernel development. Git is a free software distributed under the terms of the GNU General Public License version 2.

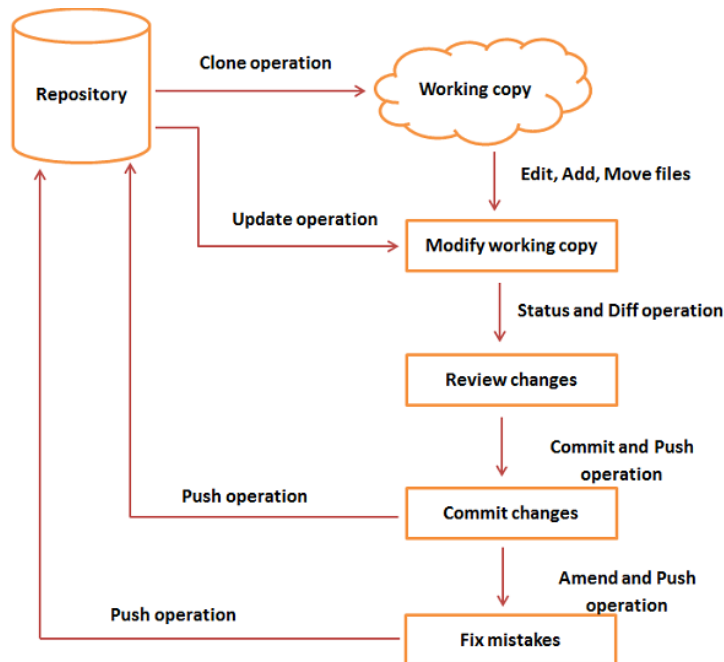
Git Life Cycle

General workflow is as follows –

1. Clone the Git repository as a working copy.
2. Modify the working copy by adding/editing files.
3. If necessary, update the working copy by taking other developer's changes.
4. Review the changes before commit.
5. Commit changes. If everything is fine, then push the changes to the repository.
6. After committing, if something is wrong, then correct the last commit and push the changes to the repository.



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Git Life Cycle

Git Commands:

```
pwd
mkdir
ls
```

```
MINGW64~/Users/junai/OneDrive - Shri Vile Parle Kelavani Mandal/Desktop/DJSCE/SEM 6/SE/Experiment 9/project.git
junai@DESKTOP-T0060TG MINGW64 ~/OneDrive - Shri Vile Parle Kelavani Mandal/Deskt
op/DJSCE/SEM 6/SE/Experiment 9 (master)
$ pwd
/c/Users/junai/OneDrive - Shri Vile Parle Kelavani Mandal/Desktop/DJSCE/SEM 6/SE
/Experiment 9
junai@DESKTOP-T0060TG MINGW64 ~/OneDrive - Shri Vile Parle Kelavani Mandal/Deskt
op/DJSCE/SEM 6/SE/Experiment 9 (master)
$ mkdir project.git
junai@DESKTOP-T0060TG MINGW64 ~/OneDrive - Shri Vile Parle Kelavani Mandal/Desktop/DJSCE/SEM 6/SE/
Experiment 9 (master)
$ cd project.git/
junai@DESKTOP-T0060TG MINGW64 ~/OneDrive - Shri Vile Parle Kelavani Mandal/Desktop/DJSCE/SEM 6/SE/
Experiment 9/project.git (master)
$ ls
junai@DESKTOP-T0060TG MINGW64 ~/OneDrive - Shri Vile Parle Kelavani Mandal/Desktop/DJSCE/SEM 6/SE/
Experiment 9/project.git (master)
$ git --bare init
Initialized empty Git repository in C:/Users/junai/OneDrive - Shri Vile Parle Kelavani Mandal/Desktop/DJSCE/SEM
6/SE/Experiment 9/project.git/
junai@DESKTOP-T0060TG MINGW64 ~/OneDrive - Shri Vile Parle Kelavani Mandal/Desktop/DJSCE/SEM 6/SE/Experiment 9/
project.git (BARE:master)
$ ls
HEAD config description hooks/ info/ objects/ refs/
junai@DESKTOP-T0060TG MINGW64 ~/OneDrive - Shri Vile Parle Kelavani Mandal/Desktop/DJSCE/SEM 6/SE/Experiment 9/
project.git (BARE:master)
$
```




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ssh-keygen

```
MINGW64:/c:/Users/junai/OneDrive - Shri Vile Parle Kelavani Mandal/Desktop/DJSCE/SEM 6/SE/Experiment 9/project.git
junai@DESKTOP-T0060TG MINGW64 ~/OneDrive - Shri Vile Parle Kelavani Mandal/Desktop/DJSCE/SEM 6/SE/Experiment 9/proje
ct.git (BARE:master)
$ pwd
/c:/Users/junai/OneDrive - Shri Vile Parle Kelavani Mandal/Desktop/DJSCE/SEM 6/SE/Experiment 9/project.git
junai@DESKTOP-T0060TG MINGW64 ~/OneDrive - Shri Vile Parle Kelavani Mandal/Desktop/DJSCE/SEM 6/SE/Experiment 9/proje
ct.git (BARE:master)
$ ssh-keygen
Generating public/private rsa key pair.
Enter file in which to save the key (/c:/Users/junai/.ssh/id_rsa):
/c:/Users/junai/.ssh/id_rsa already exists.
Overwrite (y/n)? y
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /c:/Users/junai/.ssh/id_rsa
Your public key has been saved in /c:/Users/junai/.ssh/id_rsa.pub
The key fingerprint is:
SHA256:yyID9/ZgWHLShnToI9dwxR8ySx/tW0KICxFBpVQnlo4 junai@DESKTOP-T0060TG
The key's randomart image is:
+----[RSA 3072]-----+
| ..o*o=..|
| .B.=o+o|
| + o. O.B|
| + = . E + .|
| . = O S +|
| o @ + . .|
| + B o |
| = + |
| . |
+----[SHA256]-----+
junai@DESKTOP-T0060TG MINGW64 ~/OneDrive - Shri Vile Parle Kelavani Mandal/Desktop/DJSCE/SEM 6/SE/Experiment 9/proje
ct.git (BARE:master)
$
```

git init
git status

```
MINGW64:/c:/Users/junai/OneDrive - Shri Vile Parle Kelavani Mandal/Deskto...
junai@DESKTOP-T0060TG MINGW64 ~/OneDrive - Shri Vile Parle Kelavani Mandal/Deskto
p/DJSCE/SEM 6/SE/Experiment 9 (master)
$ git init
Initialized empty Git repository in C:/Users/junai/OneDrive - Shri Vile Parle Ke
lavani Mandal/Desktop/DJSCE/SEM 6/SE/Experiment 9/.git/
junai@DESKTOP-T0060TG MINGW64 ~/OneDrive - Shri Vile Parle Kelavani Mandal/Deskto
p/DJSCE/SEM 6/SE/Experiment 9 (master)
$ git status
On branch master

No commits yet

Untracked files:
  (use "git add <file>..." to include in what will be committed)
    SS1.png
    project.git/
    ss2.png

nothing added to commit but untracked files present (use "git add" to track)
junai@DESKTOP-T0060TG MINGW64 ~/OneDrive - Shri Vile Parle Kelavani Mandal/Deskto
p/DJSCE/SEM 6/SE/Experiment 9 (master)
$
```

git add .



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```
MINGW64:/c/Users/junai/OneDrive - Shri Vile Parle Kelavani Mandal/Deskt...
Untracked files:
(use "git add <file>..." to include in what will be committed)
  SS1.png
  project.git/
  ss2.png

nothing added to commit but untracked files present (use "git add" to track)

junai@DESKTOP-T0060TG MINGW64 ~/OneDrive - Shri Vile Parle Kelavani Mandal/Deskt
op/DJSCE/SEM 6/SE/Experiment 9 (master)
$ git add .
warning: LF will be replaced by CRLF in project.git/HEAD.
The file will have its original line endings in your working directory
warning: LF will be replaced by CRLF in project.git/config.
The file will have its original line endings in your working directory
warning: LF will be replaced by CRLF in project.git/description.
The file will have its original line endings in your working directory
warning: LF will be replaced by CRLF in project.git/hooks/applypatch-msg.sample.
The file will have its original line endings in your working directory
warning: LF will be replaced by CRLF in project.git/hooks/commit-msg.sample.
The file will have its original line endings in your working directory
warning: LF will be replaced by CRLF in project.git/hooks/fsmonitor-watchman.sam
ple.
```



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git status

```
MINGW64:/c:/Users/junai/OneDrive - Shri Vile Parle Kelavani Mandal/Desktop/DJSCE/S...
junai@DESKTOP-T0060TG MINGW64 ~/OneDrive - Shri Vile Parle Kelavani Mandal/Deskt
op/DJSCE/SEM 6/SE/Experiment 9 (master)
$ git status
On branch master

No commits yet

Changes to be committed:
  (use "git rm --cached <file>..." to unstage)
    new file:   SS1.png
    new file:   SS4.png
    new file:   project.git/HEAD
    new file:   project.git/config
    new file:   project.git/description
    new file:   project.git/hooks/applypatch-msg.sample
    new file:   project.git/hooks/commit-msg.sample
    new file:   project.git/hooks/fsmonitor-watchman.sample
    new file:   project.git/hooks/post-update.sample
    new file:   project.git/hooks/pre-applypatch.sample
    new file:   project.git/hooks/pre-commit.sample
    new file:   project.git/hooks/pre-merge-commit.sample
    new file:   project.git/hooks/pre-push.sample
    new file:   project.git/hooks/pre-rebase.sample
    new file:   project.git/hooks/pre-receive.sample
    new file:   project.git/hooks/prepare-commit-msg.sample
    new file:   project.git/hooks/push-to-checkout.sample
    new file:   project.git/hooks/update.sample
    new file:   project.git/info/exclude
```

git commit

```
MINGW64:/c:/Users/junai/OneDrive - Shri Vile Parle Kelavani Mandal/Desktop/DJSCE/S...
junai@DESKTOP-T0060TG MINGW64 ~/OneDrive - Shri Vile Parle Kelavani Mandal/Deskt
op/DJSCE/SEM 6/SE/Experiment 9 (master)
$ git commit -m "First Commit"
[master (root-commit) b41f6cc] First Commit
20 files changed, 804 insertions(+)
create mode 100644 SS1.png
create mode 100644 SS4.png
create mode 100644 project.git/HEAD
create mode 100644 project.git/config
create mode 100644 project.git/description
create mode 100644 project.git/hooks/applypatch-msg.sample
create mode 100644 project.git/hooks/commit-msg.sample
create mode 100644 project.git/hooks/fsmonitor-watchman.sample
create mode 100644 project.git/hooks/post-update.sample
create mode 100644 project.git/hooks/pre-applypatch.sample
create mode 100644 project.git/hooks/pre-commit.sample
create mode 100644 project.git/hooks/pre-merge-commit.sample
create mode 100644 project.git/hooks/pre-push.sample
create mode 100644 project.git/hooks/pre-rebase.sample
create mode 100644 project.git/hooks/pre-receive.sample
create mode 100644 project.git/hooks/prepare-commit-msg.sample
create mode 100644 project.git/hooks/push-to-checkout.sample
create mode 100644 project.git/hooks/update.sample
create mode 100644 project.git/info/exclude
create mode 100644 ss2.png

junai@DESKTOP-T0060TG MINGW64 ~/OneDrive - Shri Vile Parle Kelavani Mandal/Desktop/DJSCE
/SEM 6/SE/Experiment 9 (master)
$ |
```



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```
git remote add origin
git branch -M master
git push -u origin master
```

```
MINGW64/c:/Users/junai/OneDrive - Shri Vile Parle Kelavani Mandal/Desktop/DJSCE/S...
create mode 100644 project.git/hooks/update.sample
create mode 100644 project.git/info/exclude
create mode 100644 ss2.png

junai@DESKTOP-T0060TG MINGW64 ~/OneDrive - Shri Vile Parle Kelavani Mandal/Desktop/DJSCE
/SEM 6/SE/Experiment 9 (master)
$ git remote add origin https://github.com/junaidgirkar/SE_EXP_9.git

junai@DESKTOP-T0060TG MINGW64 ~/OneDrive - Shri Vile Parle Kelavani Mandal/Desktop/DJSCE
/SEM 6/SE/Experiment 9 (master)
$ git branch -M master

junai@DESKTOP-T0060TG MINGW64 ~/OneDrive - Shri Vile Parle Kelavani Mandal/Desktop/DJSCE
/SEM 6/SE/Experiment 9 (master)
$ git push -u origin master
Enumerating objects: 25, done.
Counting objects: 100% (25/25), done.
Delta compression using up to 12 threads
Compressing objects: 100% (23/23), done.
Writing objects: 100% (25/25), 136.33 KiB | 13.63 MiB/s, done.
Total 25 (delta 2), reused 0 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (2/2), done.
To https://github.com/junaidgirkar/SE_EXP_9.git
 * [new branch]      master -> master
branch 'master' set up to track 'origin/master'.

junai@DESKTOP-T0060TG MINGW64 ~/OneDrive - Shri Vile Parle Kelavani Mandal/Desktop/DJSCE
/SEM 6/SE/Experiment 9 (master)
$
```

```
git add .
git stash
git pull
```

```
MINGW64/c:/Users/junai/OneDrive - Shri Vile Parle Kelavani Mandal/Desktop/DJSCE/S...
SS8.png
Please move or remove them before you merge.
Aborting
Updating b41f6cc..9638b47

junai@DESKTOP-T0060TG MINGW64 ~/OneDrive - Shri Vile Parle Kelavani Mandal/Desktop/DJSCE
/SEM 6/SE/Experiment 9 (master)
$ git add .

junai@DESKTOP-T0060TG MINGW64 ~/OneDrive - Shri Vile Parle Kelavani Mandal/Desktop/DJSCE
/SEM 6/SE/Experiment 9 (master)
$ git stash
Saved working directory and index state WIP on master: b41f6cc First Commit

junai@DESKTOP-T0060TG MINGW64 ~/OneDrive - Shri Vile Parle Kelavani Mandal/Desktop/DJSCE
/SEM 6/SE/Experiment 9 (master)
$ git pull
Updating b41f6cc..9638b47
Fast-Forward
SS5.png | Bin 0 -> 31910 bytes
SS6.png | Bin 0 -> 36746 bytes
SS7.png | Bin 0 -> 53736 bytes
SS8.png | Bin 0 -> 50107 bytes
4 files changed, 0 insertions(+), 0 deletions(-)
create mode 100644 SS5.png
create mode 100644 SS6.png
create mode 100644 SS7.png
create mode 100644 SS8.png
```



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```
git log  
git log -all -oneline -decorate -graph
```

```
MINGW64:/c/Users/junai/OneDrive - Shri Vile Parle Kelavani Mandal/Desktop/DJSCE/S...  
$ git log  
commit e7586e4200cf3e9218907be1b3c39307a2a49edd (HEAD -> master, origin/master)  
Author: Junaid Girkar <60307291+junaidgirkar@users.noreply.github.com>  
Date: Thu Jun 2 19:03:42 2022 +0530  
  
    Third Commit  
  
commit 9638b47823d7b169e258225210eb71c1e7dd59bf  
Author: Junaid Girkar <60307291+junaidgirkar@users.noreply.github.com>  
Date: Thu Jun 2 19:02:44 2022 +0530  
  
    Second Commit  
  
commit b41f6cce36bdd5229e31ec9ece1ed0def6368808  
Author: Junaid Girkar <60307291+junaidgirkar@users.noreply.github.com>  
Date: Thu Jun 2 19:00:36 2022 +0530  
  
    First Commit  
  
junai@DESKTOP-T0060TG MINGW64 ~/OneDrive - Shri Vile Parle Kelavani Mandal/Desktop/DJSCE  
/SEM 6/SE/Experiment 9 (master)  
$ git log --all --oneline --decorate --graph  
* e7586e4 (HEAD -> master, origin/master) Third Commit  
* 9638b47 Second Commit  
| * 6ff2641 (refs/stash) WIP on master: b41f6cc First Commit  
|/|  
| * fe52606 index on master: b41f6cc First Commit  
|/  
* b41f6cc First Commit
```

CONCLUSION:

Git is a version control software that can store different versions of files on a local machine or can be integrated with remote file management systems such as Github and BitBucket. In this experiment, we used the git bash CLI to run some of the git commands and linked it to Github.



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Experiment No. 10

DIV: A

Batch: A4

Team Members:

Name:	SAP ID:
Dhruvi Jodhawat	60004190032
Harvy Gandhi	60004190043
Junaid Girkar	60004190057

Aim: Study of Azure Devops

Theory:

Azure DevOps provides developer services for allowing teams to plan work, collaborate on code development, and build and deploy applications. Azure DevOps supports a collaborative culture and set of processes that bring together developers, project managers, and contributors to develop software. It allows organizations to create and improve products at a faster pace than they can with traditional software development approaches.

Azure DevOps provides integrated features that you can access through your web browser or IDE client.

Azure Repos:

Azure Repos is a set of version control tools that you can use to manage your code. Version control systems are software that help you track changes you make in your code over time. As you edit your code, you tell the version control system to take a snapshot of your files. The version control system saves that snapshot permanently so you can recall it later if you need it. Use version control to save your work and coordinate code changes across your team. Azure Repos provides two types of version control:

1. **Git repositories:** Git is the most commonly used version control system today and is quickly becoming the standard for version control. Git is a distributed version control system, meaning that your local copy of code is a complete version control repository. These fully functional local repositories make it is easy to work offline or remotely. You commit your work locally, and then sync your copy of the repository with the copy on the server.



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2. Team Foundation Version Control (TFVC): Azure Repos also supports Team Foundation Version Control (TFVC). TFVC is a centralized version control system. Typically, team members have only one version of each file on their dev machines. Historical data is maintained only on the server. Branches are path-based and created on the server.

Azure Pipelines:

Azure Pipelines automatically builds and tests code projects to make them available to others. It works with just about any language or project type. Azure Pipelines combines continuous integration (CI) and continuous delivery (CD) to test and build your code and ship it to any target.

Continuous Integration (CI) is the practice used by development teams of automating merging and testing code. Implementing CI helps to catch bugs early in the development cycle, which makes them less expensive to fix. Automated tests execute as part of the CI process to ensure quality. Artifacts are produced from CI systems and fed to release processes to drive frequent deployments. The Build service in Azure DevOps Server helps you set up and manage CI for your applications.

Continuous Delivery (CD) is a process by which code is built, tested, and deployed to one or more test and production environments. Deploying and testing in multiple environments increases quality. CI systems produce deployable artifacts, including infrastructure and apps. Automated release processes consume these artifacts to release new versions and fixes to existing systems. Monitoring and alerting systems run continually to drive visibility into the entire CD process.

Azure Boards:

Delivers a suite of Agile tools to support planning and tracking work, code defects, and issues using Kanban and Scrum methods. Azure Boards provides software development teams with the interactive and customizable tools they need to manage their software projects. It provides a rich set of capabilities including native support for Agile, Scrum, and Kanban processes,



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calendar views, configurable dashboards, and integrated reporting. These tools scale as your business grows.

Quickly and easily track work, issues, and code defects associated with your project. The Kanban board, shown in the following image, is just one of several tools that allows you to add, update, and filter user stories, bugs, features, and epics.

Azure Test Plans:

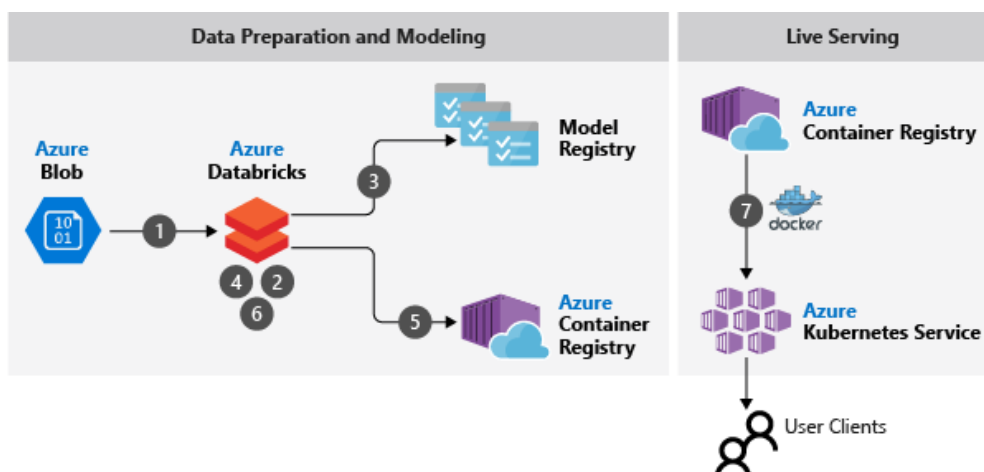
Azure Test Plans provides rich and powerful tools everyone in the team can use to drive quality and collaboration throughout the development process. The easy-to-use, browser-based test management solution provides all the capabilities required for planned manual testing, user acceptance testing, exploratory testing, and gathering feedback from stakeholders.

Azure Artifacts:

Azure Artifacts enable developers to consume and publish different types of packages to Artifacts feeds and public registries such as NuGet.org and npmjs.com. You can use Azure Artifacts in conjunction with Azure Pipelines to deploy packages, publish build artifacts, or integrate files between your pipeline stages to build, test, or deploy your application.

Azure Architecture Solutions:

1. Azure Architecture for Content based Recommendation System:

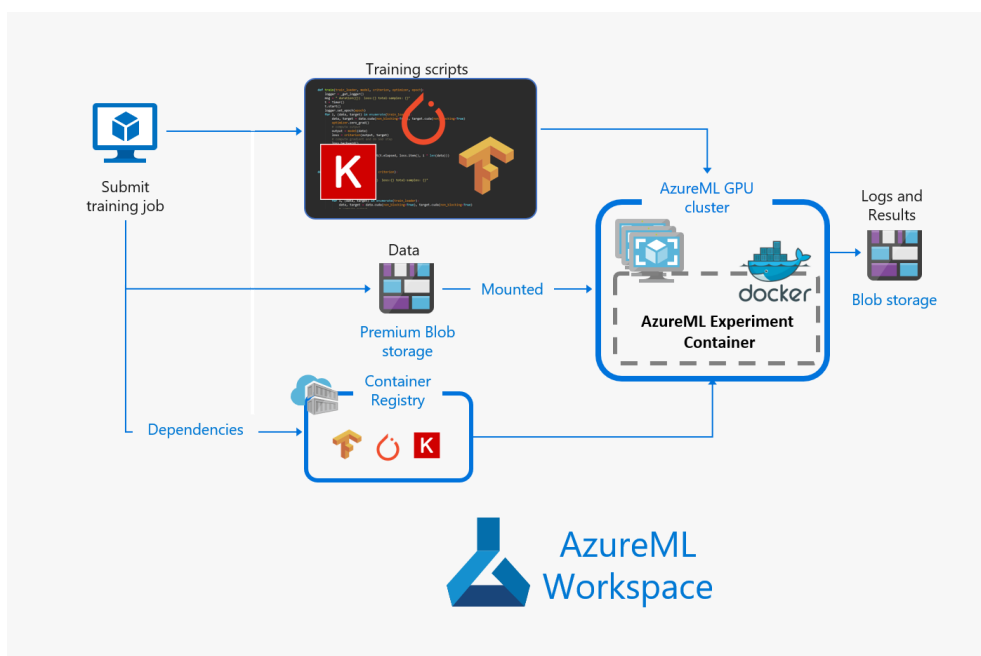


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This example scenario covers the training, evaluation, and deployment of a machine learning model for content-based personalization on Apache Spark using Azure Databricks. In this case, a model is trained with a supervised classification algorithm on a dataset containing user and item features. The label for each example is a binary value indicating that the user engaged with (for example, clicked) an item. This scenario covers a subset of the steps required for a full end-to-end recommendation system workload. The broader context of this scenario is based on a generic e-commerce website with a front end that serves rapidly changing content to its users. This website uses cookies and user profiles to personalize the content for that user. Along with user profiles, the website may have information about every item it serves to each user.

2. Azure Architecture for Distributed Training Deep learning models:

This reference architecture shows how to conduct distributed training of deep learning models across clusters of GPU-enabled VMs. The scenario is image classification, but the solution can be generalized to other deep learning scenarios such as segmentation or object detection.



Workflow

This architecture consists of the following services:

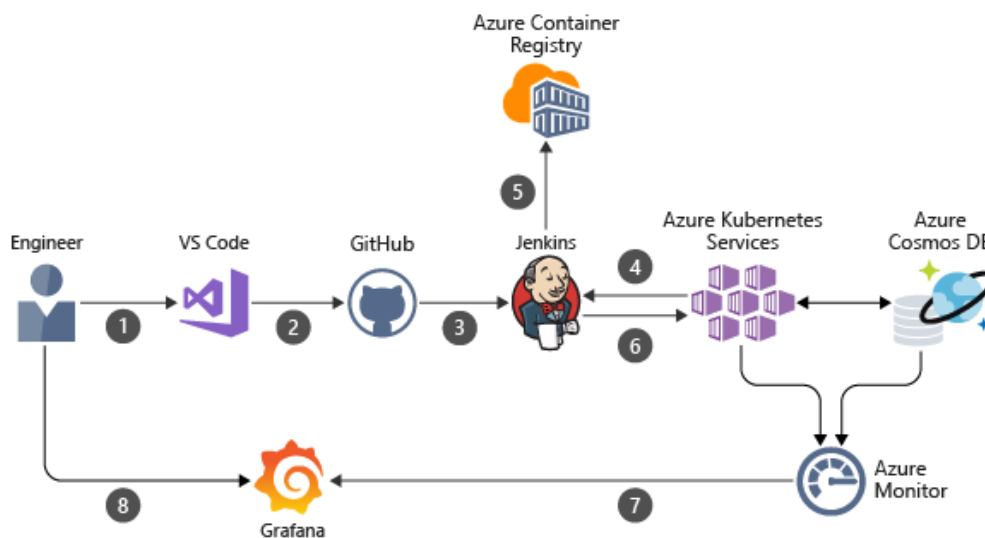
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Azure Machine Learning Compute plays the central role in this architecture by scaling resources up and down according to need. Azure ML Compute is a service that helps provision and manage clusters of VMs, schedule jobs, gather results, scale resources, and handle failures. It supports GPU-enabled VMs for deep learning workloads.

Standard Blob storage is used to store the logs and results. Premium Blob storage is used to store the training data and is mounted in the nodes of the training cluster using blobfuse. The Premium tier of Blob storage offers better performance than the Standard tier and is recommended for distributed training scenarios. When mounted using blobfuse, during first the epoch, the training data is downloaded to the local disks of the training cluster and cached. For every subsequent epoch, the data is read from the local disks, which is the most performant option.

Container Registry is used to store the Docker image that Azure Machine Learning Compute uses to run the training.

3. Azure Architecture for CI/CD:



Azure Web Apps is a fast and simple way to create web apps using ASP.NET, Java, Node.js, or PHP. Deliver value faster to your customers with a continuous integration and continuous deployment (CI/CD) pipeline that pushes each of your changes automatically to Web Apps.