**4. Technical Process.**

**4.1 Methods, Tools, and Techniques**

This section specifies the technical methods, tools, and techniques to be used on the project. Identify the computing system(s), development method(s), standards, policies, procedures, team

structure(s), programming language(s), and other notations, tools, techniques,

* Most projects include elements of plan-driven and agile processes. Deciding on the balance depends on:
  + Is it important to have a very detailed specification and design before moving to implementation? If so, you probably need to use a plan-driven approach.
  + Is an incremental delivery strategy, where you deliver the software to customers and get rapid feedback from them, realistic? If so, consider using agile methods.
  + How large is the system that is being developed? Agile methods are most effective when the system can be developed with a small co-located team who can communicate informally. This may not be possible for large systems that require larger development teams so a plan-driven approach may have to be used.
  + What type of system is being developed?
  + Plan-driven approaches may be required for systems that require a lot of analysis before implementation
  + What is the expected system lifetime?
  + Long-lifetime systems may require more design documentation to communicate the original intentions of the system developers to the support team.
  + What technologies are available to support system development?
  + Agile methods rely on good tools to keep track of an evolving design
  + How is the development team organized?
  + If the development team is distributed or if part of the development is being outsourced, then you may need to develop design documents to communicate across the development teams.

**4.2.1 Software Requirements Specification (SRS)**

**2.1 Problem statement:**

Tourist face the problem related to book a transport for a journey. Customer also face the problem about selecting the transport according to their personality. The system will help them to book a transport and driver online. Customer also face the problem about daily fare. System will also help them about each and every transport fair per day. Admin staff also face the problem about their transport location.

**2.2 functions and its specifications**

**User activities:**

**2.2.1 Login or sign in**

|  |  |  |  |
| --- | --- | --- | --- |
| **Function id** | T1 | | |
| **Function name** | Sign in or login | | |
| **Description** | **Requirements** | **Input** | **Output** |
| This function will help to identify a user for selecting or booking a transport. | Internet should be available. | Press the login button and fill the form. | User will logged in |
| **2.2.2 view all available transport** | | | |
| **Function id** | T2 | | |
| **Function name** | view car | | |
| **Description** | **Requirements** | **Input** | **Output** |
| This function will help user to view all the available transport. | Internet should be available. | Select the button to see all the car | User can see all the cars. |
|  | | | |

**2.2.3 Drop selected Transport**

|  |  |  |  |
| --- | --- | --- | --- |
| **Function id** | T3 | | |
| **Function name** | Drop car | | |
| **Description** | **Requirements** | **Input** | **Output** |
| This function will help to drop transport if his plan is changed or he did not want that car. | Internet should be available. | Press the drop button to drop that transport. | Customer will drop that booking. |

**2.2.4 Select Transport for tour**

|  |  |  |  |
| --- | --- | --- | --- |
| **Function id** | T4 | | |
| **Function name** | Add transport | | |
| **Description** | **Requirements** | **Input** | **Output** |
| This function will help to add a transport. | Internet should be available. | Press the add button to book the transport. | Transport will be booked. |

**2.2.5 Add car for ‘ad’**

|  |  |  |  |
| --- | --- | --- | --- |
| **Function id** | T5 | | |
| **Function name** | Add car ‘ad’ | | |
| **Description** | **Requirements** | **Input** | **Output** |
| This function will help to add a car for ‘ad’ to sale. | Internet should be available. | Add Cars specifications and its image. | The ad will be posted. |

**2.2.6 Update car ‘ad’**

|  |  |  |  |
| --- | --- | --- | --- |
| **Function id** | T6 | | |
| **Function name** | Update car ‘ad’ | | |
| **Description** | **Requirements** | **Input** | **Output** |
| This function will help users to update their cars ‘ad’ specifications | Internet should be available. | Update the status of car ‘ad’. | Status updated. |

**2.2.7 Delete car ‘ad’**

|  |  |  |  |
| --- | --- | --- | --- |
| **Function id** | T7 | | |
| **Function name** | Delete car ‘ad’ | | |
| **Description** | **Requirements** | **Input** | **Output** |
| This function will help users to delete their cars ‘ad’ specifications | Internet should be available. | Delete the status of car ‘ad’. | Specifications deleted. |

**Admin activities:**

**2.2.8 Add transport specifications**

|  |  |  |  |
| --- | --- | --- | --- |
| **Function id** | T8 | | |
| **Function name** | Add transport | | |
| **Description** | **Requirements** | **Input** | **Output** |
| This function will help to add a transport and made it available for users. | Internet should be available | Add a transport and its specifications. | Transport will be added. |

**2.2.9 Update transport specifications**

|  |  |  |  |
| --- | --- | --- | --- |
| **Function id** | T9 | | |
| **Function name** | Update transport | | |
| **Description** | **Requirements** | **Input** | **Output** |
| This function will help to update the status of transport. | Internet should be available. | Press the update button to update the transport specifications. | Transport status updated. |

**2.2.10 Delete transport and its specifications**

|  |  |  |  |
| --- | --- | --- | --- |
| **Function id** | T10 | | |
| **Function name** | Delete transport | | |
| **Description** | **Requirements** | **Input** | **Output** |
| This function will help to delete the transport if it is crashed. | Internet should be available. | Delete the transport and its specifications. | Transport deleted. |

**2.2.11 Current location**

|  |  |  |  |
| --- | --- | --- | --- |
| **Function id** | T11 | | |
| **Function name** | Current location | | |
| **Description** | **Requirements** | **Input** | **Output** |
| This function will help to see the current location of transport. | Internet should be available. | Press the button of current location. | See the transport current location. |

**4.2.2 Software Design Description (SDD)**

* When we describe and discuss processes, we usually talk about the activities in these processes such as specifying a data model, designing a user interface, etc. and the ordering of these activities.
* Process descriptions may also include:
  + Products, which are the outcomes of a process activity; e.g. model of software architecture
  + Roles, which reflect the responsibilities of the people involved in the process;
  + Pre- and post-conditions, which are statements that are true before and after a process activity has been enacted or a product produced.
    - Pre condition for architecture design- All requirements has been approved before design phase begins
    - Post condition- UML models describing the architecture has been reviewed

Admin

**4.2.3 Software Test Plan**

**Program testing goals**

* **To demonstrate to the developer and the customer that the software meets its requirements.** 
  + **For custom software,** this means that there should be at least one test for every requirement in the requirements document.
  + **For generic software products**, it means that there should be tests for all of the system features, that will be incorporated in the product release.
* **To discover situations in which the behavior of the software is incorrect, and undesirable**
  + **Defect testing** is concerned with rooting out undesirable system behavior such as system crashes, unwanted interactions with other systems, incorrect computations and data corruption.

**Verification vs validation.**

* Verification:   
   "Are we building the product right”.
* The software behaviour should be correct.
* Validation:  
   "Are we building the right product”.

The software should do what the user really requires

**First Test Plan**

* Writing tests before code clarifies the requirements to be implemented**.**
* Tests are written as programs so that they can be executed automatically. The test includes a check that it has executed correctly.
  + Usually relies on a testing framework such as Junit.
* All previous and new tests are run when new functionality is added, thus checking that the new functionality has not introduced errors.

**4.3 User Documentation.**



* The software requirements document is the official statement of what is required of the system developers.
* Should include both a definition of user requirements and a specification of the system requirements.
* It is NOT a design document. As far as possible, it should set of WHAT the system should do rather than HOW it should do it**.**

**4.4 Project Support Functions**

* *Project planning* 
  + Project managers are responsible for planning. estimating and scheduling project development and assigning people to tasks.
* *Reporting*
  + Project managers are usually responsible for reporting on the progress of a project to customers and to the managers of the company developing the software.
* *Risk management*
  + Project managers assess the risks that may affect a project, monitor these risks and take action when problems arise.
  + ***People management***
  + Project managers have to choose people for their team and establish ways of working that leads to effective team performance
  + ***Proposal writing***
  + The first stage in a software project may involve writing a proposal to win a contract to carry out an item of work. The proposal describes the objectives of the project and how it will be carried

**5. Work Packages, Schedule, and Budget.**

5.1 Work Packages

* Estimates are made to discover the cost of producing a software system.
  + You take into account, hardware, software, travel, training and effort costs.
* There is not a simple relationship between the development cost and the price charged to the customer.
* Broader organisational, economic, political and business considerations influence the price charged.

|  |  |
| --- | --- |
| **Factor** | **Description** |
| **Market opportunity** | **A development organization may quote a low price because it wishes to move into a new segment of the software market. Accepting a low profit on one project may give the organization the opportunity to make a greater profit later. The experience gained may also help it develop new products.** |
| **Cost estimate uncertainty** | **If an organization is unsure of its cost estimate, it may increase its price by a contingency over and above its normal profit.** |
| **Contractual terms** | **A customer may be willing to allow the developer to retain ownership of the source code and reuse it in other projects. The price charged may then be less than if the software source code is handed over to the customer.** |

**5.2 Dependencies**

|  |  |  |  |
| --- | --- | --- | --- |
| **Task** | **Effort (person-days)** | **Duration (days)** | **Dependencies** |
| **T1** | **15** | **10** |  |
| **T2** | **8** | **15** |  |
| **T3** | **20** | **15** | **T1 (M1)** |
| **T4** | **5** | **10** |  |
| **T5** | **5** | **10** | **T2, T4 (M3)** |
| **T6** | **10** | **5** | **T1, T2 (M4)** |
| **T7** | **25** | **20** | **T1 (M1)** |
| **T8** | **75** | **25** | **T4 (M2)** |
| **T9** | **10** | **15** | **T3, T6 (M5)** |
| **T10** | **20** | **15** | **T7, T8 (M6)** |
| **T11** | **10** | **10** | **T9 (M7)** |
| **T12** | **20** | **10** | **T10, T11 (M8)** |

**.**

* Task-oriented.
  + The motivation for doing the work is the work itself;
* Self-oriented.
  + The work is a means to an end, which is the achievement of individual goals - e.g. career progress,
* Interaction-oriented
  + The principal motivation is the presence and actions of co-workers. People go to work because they like to go to work.

**5.3 Resource Requirements**

* *Project planning* 
  + Project managers are responsible for planning. estimating and scheduling project development and assigning people to tasks.
* *Reporting*
  + Project managers are usually responsible for reporting on the progress of a project to customers and to the managers of the company developing the software.
* *Risk management*
  + Project managers assess the risks that may affect a project, monitor these risks and take action when problems arise.
  + ***People management***
  + Project managers have to choose people for their team and establish ways of working that leads to effective team performance
  + ***Proposal writing***
  + The first stage in a software project may involve writing a proposal to win a contract to carry out an item of work. The proposal describes the objectives of the project and how it will be carried

**5.4 Budget and Resource Allocation**

* Estimates are made to discover the cost of producing a software system.
  + You take into account, hardware, software, travel, training and effort costs.
* There is not a simple relationship between the development cost and the price charged to the customer.

**5.5 Schedule**

* Project scheduling is the process of deciding how the work in a project will be **organized as separate tasks**, and **when** and **how** these tasks will be executed.
* You estimate the **calendar time** needed to complete each task, the **effort required** and **who will work** on the tasks that have been identified.
* You also have to estimate the **resources** needed to complete each task, such as the **disk space** required on a server, the time required on **specialized hardware,** such as a simulator, and what the **travel budget** will be..
* **Split project into tasks** and estimate time and resources required to complete each task.
* **Organize tasks concurrently** to make optimal use of workforce.
* **Minimize task dependencies** to avoid delays caused by one task waiting for another to complete.
* Dependent on project managers intuition and experience.
* **Deliverables are work products** that are delivered to the customer, e.g. a requirements document for the system



