Assignment 1

Group - 2

1. **Raman Sharma – 22114076**

Contribution: Contributed in describing the various symbols used in a flowchart

Contact No: +91 75218 29455

Email ID: raman_s@cs.iitr.ac.in

2. **Boda Yashwanth – 22114022**

Contribution: Contributed by writing about the various symbols used in flowchart and example to explain them, as mentioned in Question 2

Contact No: +91 89779 25111

Email ID: boda_y@cs.iitr.ac.in

3. **Ayush Ranjan – 22114018**

Contribution: Contributed by describing the first scenario as mentioned in Question 1

Contact No: +91 74829 58551

Email ID: ayush_r@cs.iitr.ac.in

4. **Souvik Karmakar – 22114096**

Contribution: Contributed by drawing the flowchart and editing this document.

Contact No: +91 86429 24659

Email ID: souvik_k@cs.iitr.ac.in

5. **Sarvasva Gupta – 22114086**

Contribution: Contributed by describing the second scenario as mentioned in Question 1

Contact No: +91 79899 04811

Email ID: sarvasva_g@cs.iitr.ac.in

6. **Anvit Gupta – 22114009**

Contribution: Contributed by comparing various stages of software development in the two scenarios as mentioned in Question 1

Contact No: +91 94620 11044

Email ID: anvit_g@cs.iitr.ac.in

7. **Vineet Kumar – 22114107**

Contribution: Contributed by comparing the process of performing various stages of software development in the two scenarios as mentioned in Question 1

Contact No: +91 92634 36403

Email ID: vineet_k@cs.iitr.ac.in

Q. Discuss and compare the process for performing feasibility study, requirement gathering and analysis and software deployment and maintenance in the following scenarios:

a. When the software is to be developed for a given customer. i.e. end users are known

b. When the software is to be developed for an open market i.e. to be launched in the product market.

Ans. Below is the description and comparison of the processes of performing feasibility study, requirement gathering and analysis, and software deployment and maintenance in scenarios where the software is developed for a specific customer (end users are known) and for an open market (to be launched in the product market).

Scenario A: Software for a Given Customer (Known End Users)

1. **Feasibility Study:**
   - **Purpose:** Assess whether the proposed software aligns with the customer's needs and constraints.
   - **Focus:** Customer requirements, budget, timeline, and technical feasibility.
   - **Interaction:** Close collaboration with the customer to understand specific needs and constraints.
2. **Requirement Gathering and Analysis:**
   - **Approach:** Direct communication with the customer to gather detailed requirements.

- **Documentation:** Detailed requirements documentation, possibly involving prototypes.
- **Changes:** Iterative process with customer feedback for refining requirements.

3. **Software Development:**
   - **Tailored Solutions:** Develop software tailored to the unique needs of the customer.
   - **Continuous Collaboration:** Regular meetings and updates with the customer to ensure alignment.
4. **Deployment:**
   - **Customized Deployment:** Deploy the software in the customer's environment with customization if needed.
   - **Training:** Provide specific training for end users as per their requirements.
5. **Maintenance:**
   - **Customer Support:** Offer dedicated customer support for issue resolution.
   - **Updates and Enhancements:** Regularly update and enhance the software based on customer feedback.

Scenario B: Software for an Open Market (Product Launch)

1. **Feasibility Study:**
   - **Purpose:** Evaluate market demand, competition, and financial viability.
   - **Focus:** Market analysis, potential user base, development costs, and revenue projections.
   - **Interaction:** May involve market research, competitor analysis, and potential user feedback.
2. **Requirement Gathering and Analysis:**
   - **Approach:** Gather general requirements applicable to a broader audience.
   - **Documentation:** Develop a product requirements document with flexibility for future updates.
   - **Changes:** Address general needs while allowing for scalability and adaptability.
3. **Software Development:**
   - **Scalable Solutions:** Develop a scalable and flexible solution that caters to a wider audience.
   - **Innovation:** Focus on features that set the product apart in the market.
4. **Deployment:**
   - **Mass Deployment:** Deploy the software on a larger scale to reach a broader market.
   - **User Onboarding:** Develop user-friendly onboarding processes for a diverse user base.
5. **Maintenance:**

- **Continuous Improvement:** Regularly update the software with new features or improvements.
- **Bug Fixes:** Provide prompt bug fixes and support to maintain a positive user experience.

Comparison:

1. **Customization vs. Scalability:**
   - Scenario A focuses on customization for specific customer needs.
   - Scenario B emphasizes scalability and adaptability for a diverse market.
2. **User Interaction:**
   - Scenario A involves continuous and direct interaction with the end user.
   - Scenario B relies on market research and user feedback from a broader audience.
3. **Deployment Approach:**
   - Scenario A involves tailored deployment in the customer's environment.
   - Scenario B requires mass deployment strategies for a wider market.
4. **Maintenance Strategy:**
   - Scenario A involves dedicated customer support and personalized updates.
   - Scenario B focuses on continuous improvement based on broader market trends.

In summary, the key differences lie in the level of customization, user interaction, and deployment strategies based on whether the software is tailored for a specific customer or designed for a larger, open market.

Q. Draw various symbols for flow charts and describe them using any example.

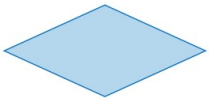
Ans. The various symbols used in flow charts are:

1. **Start/End Symbol** 

The terminator symbol marks the starting or ending point of the system. It usually contains the word "Start" or "End."

2. **Action/Process Symbol** 

A box can represent a single step ("add two cups of flour"), or an entire sub-process ("make bread") within a larger process.

3. Decision Symbol 

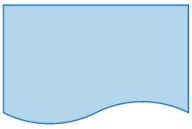
A decision or branching point. Lines representing different decisions emerge from different points of the diamond.

4. Input/Output Symbol 

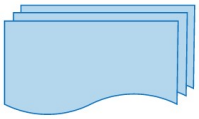
Represents material or information entering or leaving the system, such as customer order (input) or a product (output).

5. Directional Flow Symbol 

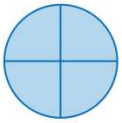
Flow lines are used to connect symbols used in the flow chart and to indicate direction of flow.

6. Document Symbol 

A printed document or report.

7. Multiple Documents Symbol 

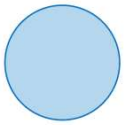
Represents multiple documents in the process.

8. Or Symbol 

Indicates that the process flow continues in more than two branches.

9. Summoning Junction Symbol 

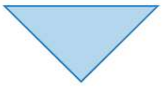
Indicates a point in the flowchart where multiple branches converge back into a single process.

10. Connector Symbol 

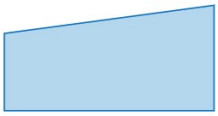
Indicates that the flow continues where a matching symbol (containing the same letter) has been placed.

11. Preparation Symbol 

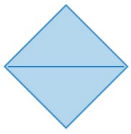
Represents a set-up to another step in the process.

12. Merge Symbol 

Indicates a step where two or more sub-lists or sub-processes become one.

13. Manual Input Symbol 

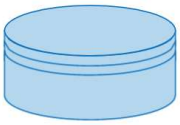
Represents a step where a user is prompted to enter information manually.

14. Sort Symbol 

Indicates a step that organizes a list of items into a sequence or sets based on some pre-determined criteria.

15. Collate Symbol 

Indicates a step that orders information into a standard format.

16. Database Symbol 

Indicates a list of information with a standard structure that allows for searching and sorting.

17. Loop Limit Symbol 

Indicates the point at which a loop should stop.

18. Manual Loop Symbol 

Indicates a sequence of commands that will continue to repeat until stopped manually.

19. Delay Symbol 

Indicates a delay in the process.

20. Data Storage or Stored Data Symbol 

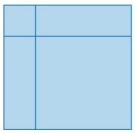
Indicates a step where data gets stored.

21. Subroutine Symbol 

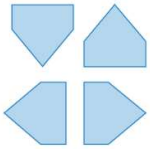
Indicates a sequence of actions that perform a specific task embedded within a larger process. This sequence of actions could be described in more detail on a separate flowchart.

22. Display Symbol 

Indicates a step that displays information.

23. Internal Storage Symbol 

Indicates that information was stored in memory during a program, used in software design flowcharts.

24. Off Page Symbol 

Indicates that the process continues off page.

Example: Below is a flowchart representing the working of an automatic vacuum cleaner used for domestic purposes.

It uses different shapes to represent different types of steps in the process. The ovals indicate the start and end points, where the vacuum cleaner is powered on and off. The rectangles indicate actions that the vacuum cleaner performs, such as scanning the environment, generating a map and location, planning a route, and following the route. The diamonds indicate decisions that the vacuum cleaner makes based on certain conditions, such as whether the route is finished, whether the battery is low, or whether the vacuum is full. The arrows indicate the direction of the flow of the process, and the labels indicate the possible outcomes of the decisions. Hence, the flowchart illustrates how the vacuum cleaner can autonomously clean a room by using sensors, algorithms, and feedback mechanisms.