

N.B. : 1) Question No. 1 is compulsory.

2) Attempt any Four questions out of remaining six questions.

1. (a) Prepare an object model to describe undirected graphs. An undirected graph consists of set vertices and a set of edges. Edges connect pairs of vertices. Your model should capture only the structure of graphs (i.e. connectivity), and need not be concerned with geometrical details such as location of vertices or lengths of edges. A typical graph is shown in Fig. (1). 10

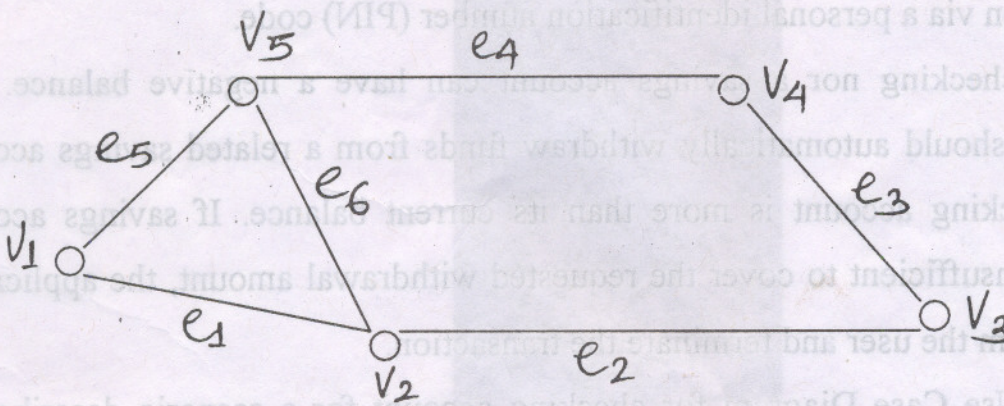


Fig. (1) : Sample undirected graph.

- (b) Write a set of test cases (i.e. specific sets of data) that you feel would adequately test the following program. 10
The program reads three integer values from a card. The three values are interpreted as representing the lengths of the sides of a triangle. The program prints a message that states whether the triangle is scalene, isosceles or equilateral.
2. (a) How is design different from analysis ? Explain in detail logical and physical design. 10
(b) What is coupling and cohesion? Explain the different types of coupling. 10
3. (a) Explain approaches for identifying classes. 10
(b) Explain boundary class, entity class, and control class with UML notations. 10

4. (a) Construct the activity diagram for the following scenario. 10
- The ViaNet bank client must be able to deposit an amount to and withdraw an amount from his or her account using the bank application. Each transaction must be recorded, and the client must have the ability to review all transactions performed against a given account. Recorded transactions must include the date, time, transaction type, amount, and account balance after the transaction.
- A ViaNet bank client can have two types of accounts: a checking account and a saving account. For each checking account, one related saving account can exist. The application must verify that a client can gain access to his or her account by identification via a personal identification number (PIN) code.
- Neither a checking nor a savings account can have a negative balance. The application should automatically withdraw funds from a related savings account on the checking account is more than its current balance. If savings account balance is insufficient to cover the requested withdrawal amount, the application should inform the user and terminate the transaction.
- (b) Draw an Use Case Diagram for checking account for a scenario described in Qu-4 (a). 10
5. (a) Draw a sequence diagram for the withdraw checking use case for a scenario described in Qu-4 (a). 10
- (b) Why is documentation an important part of analysis ? Give guidelines for developing effective documentation. 10
6. (a) Explain the Rumbaugh object modeling technique and the Booch Methodology. How do they differ? 10
- (b) What are the advantages of components? Explain what does object orientation offer that help to create reusable components ? 10
7. (a) Explain deployment diagram and its use with example. 10
- (b) How can you identify association, generalization and aggregation relationship ? Illustrate. 10