

- (e) Imagine that a two-way handshake rather than a three-way handshake was used to set up connections. In other words, the third message was not required. Are deadlocks now possible? Give an example or show that none exists.
- (f) Describe the functions of various layers of TCP/IP protocol.

3 Attempt any **four** of the following : **5×4=20**

- (a) Why is Java called machine independent language? Explain the functionality of JVM.
- (b) What is the difference between process based and thread-based Multitasking? Give the two ways by which a thread can be created using Java. Write a short program to demonstrate the creation of a new thread by extending the thread class.
- (c) What is the main difference between an application and applet? What are the advantages of Java swings over Java applets?

(d) Do any **two** of the following : **$2\frac{1}{2} \times 2 = 5$**

- (i) What are wrapper classes? Explain their use.
- (ii) What are the different types of Literals?

- (iii) Differentiate between a class variable and an instance variable. How can a class variable be accessed?

- (e) In Java only a single class can be extended. If there is a need to extend more than one class, how can this be achieved?

(f) Write short notes on (any **two**) : **$2\frac{1}{2} \times 2 = 5$**

- (i) Constructors and finalizers
- (ii) Method overloading and Method overriding
- (iii) Super keyword and Final modifier.

4 Attempt any **two** of the following : **10×2=20**

(a) Do any **two** of the following : **5×2=10**

- (i) What is a string buffer? How does it differ from a string? Give the three ways of creating a string object.
- (ii) By means of a diagram show the various streams found in the java. io package? Write a program to demonstrate how to use a stream Tokenizer to count the number of words in a file.

- (iii) What is the main difference between Readers/Writers and Input/Output streams? Give a few subclasses of Reader and Writer Class?
- (b) Write a program in Java to demonstrate communication using TCP/IP i.e. using sockets:- Write a separate code for a server and client program. The program should display the contents of the file specified in a server on to the client.
- (c) Write an Applet (use swings) to display the following outputs.
- (i)

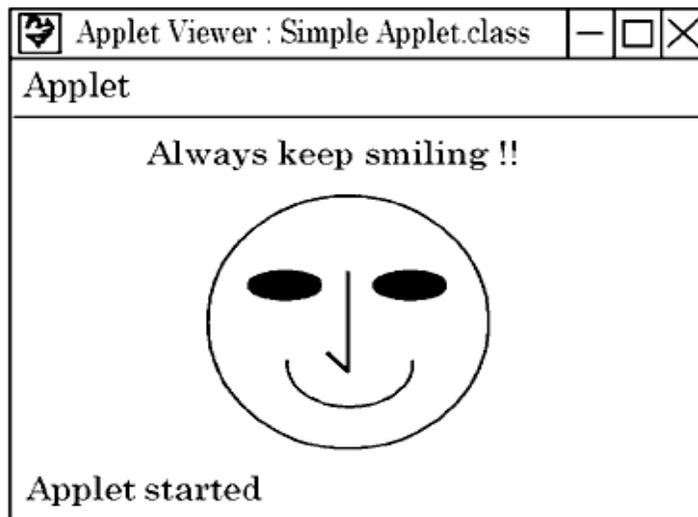


Fig. 1

(ii)

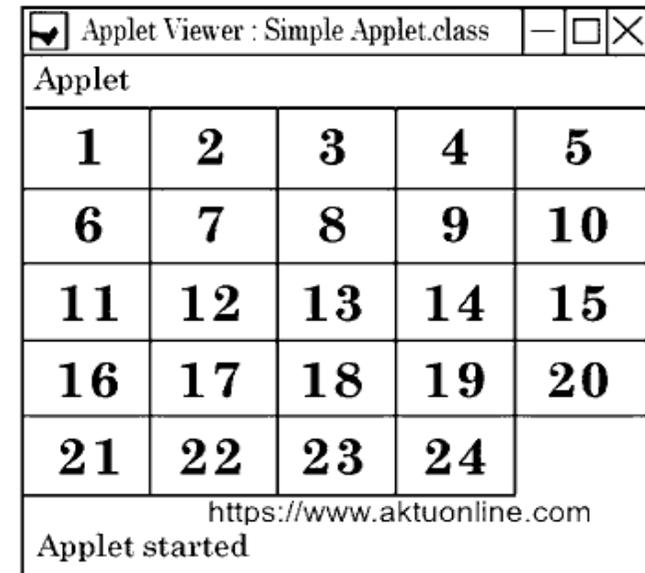


Fig. 2

- 5 Attempt any **two** of the following : **10×2=20**
- (a) What are the characteristics of JDBC? What are the various steps for using JDBC? Write a program to demonstrate these steps.
- (b) Do the following : **5×2=10**
- (i) What is RMI? What is the difference between Naming.bind and Naming.rebind method? Write a short code to invoke a remote method using Java RMI.
- (ii) Explain briefly the life cycle of a servlet. What are the basic steps for creating a servlet?

(c) Do the following : **5×2=10**

(i) What is Java Beans? Give its advantages.

(ii) What does a Dynamic Billboard Applet do? What are the three main classes that the applet contain?
