

2019 Spring

- 1 a) What is an array? Explain the features of object oriented programming in Java.
- 1 b) What is exception handling techniques? Explain with suitable examples of Java.
- 2 a) Difference between applet and application. Explain the applet class methods with their order of execution.
- 2 b) Explain multi-threading with runnable interface with suitable example.
- 3 a) Explain File reader/ writer with suitable implementation.
- 3 b) Write the code to design following form using swing component using action Performed() method.

- 4 a) What do mean by layout manager? List most of the layout type supported by java and explain any two with an example.
- 4 b) What is socket programming? Write TCP/IP based client-Server program.
- 5 a) Write a program to extract the user information such as Reg_no, Name Address, Phone_no from the database and display in the console.
- 5 b) What do you mean by JDBC Drivers? Explain about type of JDBC driver.
- 6 a) Write a java program to input 10 numbers and find out the smallest number. Do it by using generic function.
- 6 b) What do you mean by proxy server? Explain purpose and types of proxy server.

7. Write short notes on any two:
 a) Package
 b) Event Delegation Model
 c) Class and Object

2018, Fall

- 1 a) Define platform independency. Explain the bitwise operators with an example. Platform independency means something that is portable, that is, it can be used across different platforms with minimum or no modifications. This is an important feature of java because it this is what Java programming language.

```
public class operators {
    public static void main(String[] args)
    {
        int a = 5;
        int b = 7;

        // bitwise and
        // 0101 & 0111=0101 = 5
        System.out.println("a&b = " + (a & b));

        // bitwise or
        // 0101 | 0111=0111 = 7
        System.out.println("a|b = " + (a | b));

        // bitwise xor
        // 0101 ^ 0111=0010 = 2
        System.out.println("a^b = " + (a ^ b));

        // bitwise complement
        // ~0101=1010
        // will give 2's complement of 1010 = -6
        System.out.println("~a = " + ~a);
    }
}
```

2. Bitwise OR (|)
This operator is binary operator, denoted by '|'. It returns bit by bit OR of input values, i.e, if either of the bits is 1, it gives 1, else it gives 0.
2. Bitwise AND (&)
This operator is binary operator, denoted by '&'. It returns bit by bit AND of input values, i.e, if both bits are 1, it gives 1, else it gives 0.
3. Bitwise XOR (^)
This operator is binary operator, denoted by '^'. It returns bit by bit XOR of input values, i.e, if corresponding bits are different, it gives 1, else it gives 0.
4. Bitwise Complement (~)
This operator is unary operator, denoted by '~'. It returns the one's compliment representation of the input value, i.e, with all bits inversed, means it makes every 0 to 1, and every 1 to 0.

- 1 b) Write a java program to input a number and find out its factorial.

```
import java.util.Scanner;

public class Main {
    public static void main(String[] args)
    {
        int n,result=1;
        Scanner sc=new Scanner(System.in);
        System.out.println("Enter the number whose factorial you want to find: ");
        n=sc.nextInt();
        for(int i=1;i<=n;i++)
        {
            result=result*i;
        }
        System.out.println(result);
    }
}
```

//Output:
 Enter the number whose factorial you want to find: 4
 24

- 2 a) What is applet? Different between applet and application with supporting example.

An applet is a Java program that can be embedded into a web page. It runs inside the web browser and works at client side. An applet is embedded in an HTML page using the APPLLET or OBJECT tag and hosted on a web server.

Applets are used to make the web site more dynamic and entertaining.

Applet	Application
Applets are small Java programs that are designed to be included in a HTML web document. They require a Java-enabled browser for execution.	Applications are stand-alone programs that can be run independently without having to use a web browser.
Applets have no disk and network access.	Java applications have full access to local file system and network.
Applets does not require a main method() for its execution.	It requires a main method() for its execution.
Applets cannot run programs from the local machine.	Applications can run programs from the local system.
It can only access the browser specific services.	It can access all kinds of resources available on the system.
Applet has been deprecated since Java 9 in 2017 and removed from Java SE 11.	Java application won't be deprecated unless java development stops.

An applet example:

```
// A Hello World Applet
// Save file as HelloWorld.java

import java.applet.Applet;
import java.awt.Graphics;

// HelloWorld class extends Applet
public class HelloWorld extends Applet
{
    // Overriding paint() method
    @Override
    public void paint(Graphics g)
    {
        g.drawString("Hello World", 20, 20);
    }
}
```

A java application example:

```
public class Application {
    public static void main(String args[] )
    {
        System.out.println("Hello, this is Java app example.");
    }
}
```

- 2 b) What do you mean by thread? Write a java thread program to display "Pokhara University" 10 times.

A thread is the path followed when executing a program. All java program have at least one thread, known as the main thread, which is created by the JVM at the program's start, when the main() method is invoked with the main thread.

A java thread program to display "Pokhara University" 10 times is written below:

```
public class Tester extends Thread{
    public void run(){
        for (int i = 0; i<10; i++){
            System.out.println("Pokhara University");
        }
    }

    public static void main(String[] args) {
        Tester obj = new Tester();
        obj.start();
    }
}
```

Output:
 Pokhara University
 Pokhara University
 Pokhara University
 Pokhara University
 Pokhara University
 Pokhara University
 Pokhara University
 Pokhara University
 Pokhara University
 Pokhara University

- 3 a) Write a program to input 10 students name and address and store into a file called "student.txt".

```
import java.io.*;
import java.io.IOException;
import java.util.Scanner;

class Tester2{
    public static void main(String args[]) throws IOException {
        Scanner sc = new Scanner(System.in);
        FileWriter file = new FileWriter("home/pranav/Desktop/student.txt");
        for (int i = 0; i < 10; i++) {
            System.out.println("Enter name & address of student: ");
            String x = sc.next();
            String y = sc.next();
            file.write(x + "\t" + y + "\n");
            file.flush();
        }
        file.close(); //Write sc.close() below this line if there was no file.flush() in above for loop
    }
}
```

Output is inside a text file named "student.txt":
 Pranav Parasi
 Pragna Naraghat
 Prabhudha New Zealand
 Shrutu Butwal
 Smriti Kathmandu
 Krishna Pokhara
 Radha Danda
 Abimanyu Milanchowk
 Ramesh Taulihawa

- 3 b) What do mean by layout manager? Explain the Grid layout manager with an example.

LayoutManager is an interface that is implemented by all the classes of layout managers. They are used to arrange components in a particular manner.

```
import javax.swing.JButton;
import javax.swing.JFrame;
import java.awt.GridLayout;

public class GridLayoutExample{

    GridLayoutExample(){
        // Creating a constructor

        JFrame topLevelContainer=new JFrame(); //Creating an object of JFrame Class.

        JButton b1=new JButton("1"); // Creating object b1 & naming button label as "1"
        JButton b2=new JButton("2"); // Creating object b2 & naming button label as "2"

        topLevelContainer.add(b1);
        topLevelContainer.add(b2);

        topLevelContainer.setLayout(new GridLayout(1,1)); // Assigning a row & a column
        topLevelContainer.setSize(200,200); // Giving the size of the buttons
        topLevelContainer.setVisible(true); // Makes the frame visible
    }

    public static void main(String[] args) {
        new GridLayoutExample(); //
    }
}
```

Output of code will produce a window like this:

- 4 a) Write a program to create an applet as per the given below figure using grid bag constraint layout.

- 4 b) What do mean by multi thread programming? Explain the multi thread programming with supporting an example.
- 5 a) Define URL connection. Write down the steps with code for database connection.
- 6 a) Write a java program to create an applet that reads customer data like as customer id, name and address and store into the database.
- 6 b) What is generic class? Explain with generic constructor with an example.

7. Write short notes on any two:
 a) Generic methods
 b) Print Writer Class
 c) Applet Tag

Spring 2018

- 1 a) What is an interface? How to create multiple inheritance in java? Explain with an example.

- 1 b) Write a Java Program to find x to the power y. Use overloading for different cases when x and y are combinations of integer and floating points numbers.

```
class Overloading {
    static int powerOf(int x, int y) {
        return (int) Math.pow(x, y);
    }

    static float powerOf(int x, float y) {
        return (float) Math.pow(x, y);
    }

    static float powerOf(float x, int y) {
        return (float) Math.pow(x, y);
    }

    static float powerOf(float x, float y) {
        return (float) Math.pow(x, y);
    }

    public static void main(String[] args) {
        System.out.println(Overloading.powerOf(2, 5));
        System.out.println(Overloading.powerOf(2, 5.5f));
        System.out.println(Overloading.powerOf(2.2f, 5));
        System.out.println(Overloading.powerOf(2.2f, 5.5f));
    }
}
```

- 2 a) Differentiate between Java application and Java applet. Briefly explain the life cycle of Applet.

- 2 b) What are the advantages of thread? Discuss the multi thread program with an example.
- 3 a) Write a program to input 10 suppliers name, address and phone number and store into a file called "supplier.dat".
- 3 b) What are the different types of layout in java? Explain the Gridbag layout manager with an example.
- 4 a) Write the event categories. State and explain about event delegation model.
- 4 b) What do mean by proxy server? Explain the Datagram Server Socket program with an example.
- 5 a) Write a java program to read the all customer's records from the customer table and display in elegant table format.
- 5 b) Classify the types of statements and result set. Mention the steps for using the JDBC in Database applications.
- 6 a) What do you mean by generics? State and explain about general form of generic class and creation of generics methods.
- 6 b) Define URL. Explain four components of URL with suitable example.

7. Write short notes on any two:
 a) Frame
 b) Polymorphic in Generics
 c) Netbeans IDE

Spring 2017

- 1 a) Define constructor and its advantages? What is the use of super keyword in java? Explain with example.
- 1 b) What are exception handling techniques? Show the use of Array Index Out Of Bounds Exception with possible explanation.
- 2 a) Why applets are used in java? Explain the life cycle of an applet with illustrative diagram.
- 2 b) Explain the difference between random file and sequential file access in java.
- 3 a) Write the program to append to an already existing file named "student.mov".
- 3 b) Explain multithreading with runnable interface with suitable example.
- 4 a) Write the code to design the student registration form using swing components using action Performed() method.
- 4 b) Describe about event delegation model with suitable example.
- 5 a) Define proxy server, socket and port. Write down the steps for implementing TCP/IP based client and server.
- 5 b) What does the URL Connection class does and what are the methods used in the class. Explain?
- 6 a) Write a program to extract the user information such as username, email, address, age, sex and father's name from the database and display in the console.
- 6 b) What is the difference between generics methods and other methods used in java? Explain.

Generic methods are methods that introduce their own type parameters. This is similar to declaring a generic type, but the type parameter's scope is limited to the method where it is declared. Static and non-static generic methods are allowed, as well as generic class constructors.