# Part-A

**1. Write a simple Java application to print the message, "Welcome to Java".**

```
public class Welcome
{
	public static void main(String args[])
	{
		System.out.println("Hello: Welcome to Java Programming");
	}
}
```

**Program Output:**

Compile: javac Welcome.java
Run: java Welcome
Hello: Welcome to Java Programming

**2. Write a program to display the month of a year. Months of the year should be held in an array.**

```
import java.util.Calendar;
public class datedemo
{
	public static void main(String [] args)
	{
		Calendar cal=Calendar.getInstance();
String[]
month={"January","February","March","April","May","June","July","August","September","
October","Novomber","December"};
		System.out.println("Current month is : "+month[cal.get(Calendar.MONTH)]);
	}
}
```

**Program Output:**

Compile: javac datedemo.java
Run: java datedemo
Current month is : August

**3. Write a program to demonstrate a division by zero exception.**

```
public class DBZ
{
	public static void main(String []args)
	{
		int a=5;
		int b=0;
		try
		{
			System.out.println(a/b);
		}
		catch(ArithmeticException e)
		{
			System.out.println("Division By Zero is not possible");
		}
	}
```

```
}
```

**Program Output:**

Compile: javac DBZ.java
Run: java DBZ
Division By Zero is not possible

**4. Write a program to create a user defined exception say payoutOfBounds.**

```
import java.util.*;
class payoutOfBoundsException extends Exception
{
	payoutOfBoundsException(String msg)
	{
		System.out.println("pay out of bounds exception"+msg);
	}
}
public class UDEDemo
{
	public static void main(String args[]) throws payoutOfBoundsException
	{
		System.out.println("Enter the employee salary:");
		Scanner sc=new Scanner(System.in);
		int pay=sc.nextInt();
		if(pay<10000 || pay>50000)
		{
			throw new payoutOfBoundsException("salary not in a valid range");
		}
		else
			System.out.println("Employee is eligible for 30% hike");
	}
}
```

**Program Output 1:**

Compile: javac UDEDemo.java
Run: java UDEDemo
Enter the employee salary:
35000
Employee is eligible for 30% hike

**Program Output 2:**

Enter the employee salary:
9950
pay out of bounds exceptionsalary not in a valid range
Exception in thread "main" payoutOfBoundsException
	at UDEDemo.main(UDEDemo.java:19)

**5. Write a java program to add two integers and two float numbers. When no arguments are supplied, give a default value to calculate the sum. Use function overloading.**

```
public class Moverloading
{
	int add()
	{
```

```
		return(10+10);
	}
	int add(int x,int y)
	{
		return(x+y);
	}
	float add(float a,float b)
	{
		return(a+b);
	}
	public static void main(String args [])
	{
		Moverloading a=new Moverloading();
		System.out.println("Using default value sum is : "+a.add());
		System.out.println("Using integer value sum is : "+a.add(10,20));
		System.out.println("Using float value sum is : "+a.add(10.3f,20.4f));
	}
}
```

**Program Output:**

Compile: javac Moverloading.java
Run: java Moverloading
Using default value sum is : 20
Using integer value sum is : 30
Using float value sum is : 30.7

**6. Write a program to perform mathematical operations. Create a class called AddSub with methods to add and subtract. Create another class called MulDiv that extends from AddSub class to use the member data of the super class. MulDiv should have methods to multiply and divide A main function should access the methods and perform the mathematical operations.**

```
class AddSub
{
	int n1,n2;
	public AddSub(int x,int y)
	{
		n1=x;
		n2=y;
	}
	public int add()
	{
		return(n1+n2);
	}
	public int sub()
	{
		return(n1-n2);
	}
}
class MulDiv extends AddSub
{
	public MulDiv(int x,int y)
	{
		super(x,y);
```

```
	}
	public int mul()
	{
		return(n1*n2);
	}
	public int div()
	{
		return(n1/n2);
	}
}
public class Arithmeticoperation
{
	public static void main(String args[])
	{
		MulDiv ob=new MulDiv(20,10);
		System.out.println("sum=:"+ob.add());
		System.out.println("Difference=:"+ob.sub());
		System.out.println("Product=:"+ob.mul());
		System.out.println("division=:"+ob.div());
	}
}
```

**Program Output:**

```
Compile: javac Arithmeticoperation.java
Run: java Arithmeticoperation
sum=:30
Difference=:10
Product=:200
division=:2
```

**7. Write a program with class variable that is available for all instances of a class. Use static variable declaration. Observe the changes that occur in the object's member variable values.**

```
class student
{
	static String collegename="Acharya";
	int rollno;
	String name;
	student(int rollno,String name)
	{
		this.rollno=rollno;
		this.name=name;
	}
	void display()
	{
		System.out.println(rollno+"\t"+name+"\t"+collegename);
	}
}
public class staticdemo
{
	public static void main(String args[])
	{
		System.out.println("objects sharing static variable:collegename");
```

```
                student s1=new student(101,"Akash");
                student s2=new student(102,"Daksh");
                System.out.println("Rollno"+"\t"+"Name"+"\t"+"collegename");
                s1.display();
                s2.display();
                System.out.println("static variable changed by one of the object");
                System.out.println("Rollno"+"\t"+"Name"+"\t"+"collegename");
                s1.collegename="Acharya Institute of Graduate Studies";
                s1.display();
                s2.display();
        }
}
```

**Program Output:**

```
Compile: javac staticdemo.java
Run: java staticdemo
objects sharing static variable:collegename
Rollno  Name    collegename
101     Akash   Acharya
102     Daksh   Acharya
static variable changed by one of the object
Rollno  Name    collegename
101     Akash   Acharya Institute of Graduate Studies
102     Daksh   Acharya Institute of Graduate Studies
```

**8. Write a java program to create a student class with following attributes: Enrollment_id: Name, Mark of sub1, Mark of sub2, mark of sub3, Total Marks. Total of the three marks must be calculated only when the student passes in all three subjects. The pass mark for each subject is 50. If a candidate fails in any one of the subjects his total mark must be declared as zero. Using this condition write a constructor for this class. Write separate functions for accepting and displaying student details. In the main method create an array of three student objects and display the details.**

```
import java.util.*;

class Student
{
        Scanner sc =new Scanner (System.in);
        String Sid;
        String name;
        int s1,s2,s3,total;
        Student()
        {
                readstudentinfo();
        }
        public void readstudentinfo()
        {
                System.out.println("Enter the student details:");
                System.out.println("Enter the Enrollment number:");
                Sid=sc.next();
                System.out.println("Enter the student name");
                name=sc.next();
                System.out.println("Enter the student marks in 3 subjects:");
                s1=sc.nextInt();
```

```
                s2=sc.nextInt();
                s3=sc.nextInt();
                if(s1 >= 50 && s2 >= 50 && s3>= 50)
                        total=s1+s2+s3;
                else
                        total=0;
        }
        public void displayinfo()
        {
                System.out.println(Sid+"\t\t"+name+"\t\t"+total);
        }
}
public class StudentInfo
{
        public static void main(String args[])
        {
                Student s[]= new Student[3];
                for(int i=0;i<3;i++)
                        s[i]=new Student();
                System.out.println("Student Details");
                System.out.println("Enrollmentno"+"\t"+"Name"+"\t\t"+"Total");
                for(int i=0;i<3;i++)
                        s[i].displayinfo();
        }
}
```

**Program Output:**

```
Compile: javac StudentInfo.java
Run: java StudentInfo
Enter the student details:
Enter the Enrollment number:
101
Enter the student name
Anand
Enter the student marks in 3 subjects:
66 77 88
Enter the student details:
Enter the Enrollment number:
102
Enter the student name
Bhagath
Enter the student marks in 3 subjects:
66 88 84
Enter the student details:
Enter the Enrollment number:
103
Enter the student name
Daksh
Enter the student marks in 3 subjects:
77 88 90
Student Details
Enrollmentno    Name          Total
101             Anand          231
```

102 Bhagath 238
103 Daksh 255

**9. In a college first year class are having the following attributes. Name of the class (BCA, BCom, BSc), Name of the staff, No of the students in the class, Array of students in the class. Define a class called first year with above attributes and define a suitable constructor. Also write a method called bestStudent() which process a first-year object and return the student with the highest total mark. In the main method, define a first-year object and find the best student of this class.**

```
import java.util.*;
class FirstYear
{
	String classname;
	String classteacher;
	int stdcount;
	int stdmarks[] = new int[50];
	String stdnames[] = new String[50];
	Scanner sc = new Scanner(System.in);
	public FirstYear()
	{
		getinfo();
	}
	public void getinfo()
	{
		System.out.println("Please Enter the Class Name:");
		classname = sc.nextLine();
		System.out.println("Please Enter the Class Teacher Name:");
		classteacher = sc.nextLine();
		System.out.println("Please Enter the Total Number of Students of the Class:");
		stdcount = Integer.parseInt(sc.nextLine());
		System.out.println("Please Enter the Names of all the Students of the Class:");
		for (int i=0;i<stdcount;i++)
			stdnames[i] = sc.nextLine();
		System.out.println("Please Enter the Marks of all the Students of the Class:");
		for (int i=0;i<stdcount;i++)
			stdmarks[i]= sc.nextInt();
	}
	public void bestStudent()
	{
		int best=0,k=-1;
		for (int i=0;i<stdcount;i++)
		{
			if (stdmarks[i] > best)
			{
				best= stdmarks[i];
				k=i;
			}
		}
		System.out.println("the best student is: "+stdnames[k]);
	}
}
public class FirstyearStudent
{
```

```
	public static void main(String args[])
	{
		FirstYear fy=new FirstYear();
		fy.bestStudent();
	}
}
```

**Program Output:**

```
Compile: javac FirstyearStudent.java
Run: java FirstyearStudent
Please Enter the Class Name:
BCA
Please Enter the Class Teacher Name:
Hanamant
Please Enter the Total Number of Students of the Class:
2
Please Enter the Names of all the Students of the Class:
Daksh
Devarath
Please Enter the Marks of all the Students of the Class:
567
654
the best student is: Devarath
```

**10. Write a Java program to define a class called employee with the name and date of appointment. Create ten employee objects as an array and sort them as per their date of appointment. i.e, print them as per their seniority.**

```
import java.util.*;
class employee
{
	String name;
	Date appdate;
	public employee(String nm,Date apdt)
	{
		name=nm;
		appdate=apdt;
	}
	public void display()
	{

	System.out.println(name+"\t\t"+appdate.getDate()+"/"+appdate.getMonth()+"/"+appd
ate.getYear());
	}
}
class EmployeeDemo
{
	public static void main(String as[])
	{
		employee emp[]=new employee[10];
		emp[0]=new employee("Bheema",new Date(2022,05,10));
		emp[1]=new employee("Shriram",new Date(2000,01,12));
		emp[2]=new employee("Karna",new Date(2000,01,01));
		emp[3]=new employee("Arjun",new Date(2019,07,01));
```

```
                emp[4]=new employee("Laxman",new Date(2017,07,01));
                emp[5]=new employee("Seetha",new Date(2017,07,02));
                emp[6]=new employee("Venkata",new Date(2021,10,07));
                emp[7]=new employee("Krishna",new Date(2022,04,01));
                emp[8]=new employee("Govinda",new Date(2022,03,22));
                emp[9]=new employee("Ganesh",new Date(2022,11,20));
                System.out.println("\n List of employees");
                System.out.println("EmployeeName: "+"\t"+"AppoinmentDate:");
                System.out.println("================================");
                for(int i=0;i<emp.length;i++)
                        emp[i].display();
                for(int i=0;i<emp.length;i++)
                {
                        for(int j=0;j<emp.length;j++)
                        {
                                if(emp[i].appdate.after(emp[j].appdate))
                                {
                                        employee t=emp[i];
                                        emp[i]=emp[j];
                                        emp[j]=t;
                                }
                        }
                }
                System.out.println("\n List of employees seniority wise");
                System.out.println("EmployeeName: "+"\t"+"AppoinmentDate:");
                System.out.println("================================");
                for(int i=0;i<emp.length;i++)
                        emp[i].display();
        }
}
```

**Program Output:**

```
Compile: javac EmployeeDemo.java
Run: java EmployeeDemo
List of employees
EmployeeName:   AppoinmentDate:
================================
Bheema          10/5/2022
Shriram         12/1/2000
Karna          1/1/2000
Arjun          1/7/2019
Laxman          1/7/2017
Seetha         2/7/2017
Venkata         7/10/2021
Krishna         1/4/2022
Govinda         22/3/2022
Ganesh         20/11/2022

 List of employees seniority wise
EmployeeName:   AppoinmentDate:
================================
Ganesh         20/11/2022
Bheema          10/5/2022
Krishna         1/4/2022
```

Govinda 22/3/2022
Venkata 7/10/2021
Arjun 1/7/2019
Seetha 2/7/2017
Laxman 1/7/2017
Shriram 12/1/2000
Karna 1/1/2000

**11. Create a package‘ student.Fulltime.BCA‘ in your current working directory a. Create a default class student in the above package with the following attributes: Name, age, sex. b. Have methods for storing as well as displaying.**

**Procedure for this program:**

1) **Create a folder named student, then a subfolder named Fulltime, then a subfolder named BCA, in this folder write type the program and save in this folder. Save the program as BCAStudent.java.**
2) **Then exit from those folder and come to first location where you have student folder, beside of it, type the program and save it as PackageDemo.java.**
3) **After completing typing of both programs, first compile the BCAStudent.java and then PackageDemo.java.**
4) **Later run the PackageDemo**

**Program-1: BCAStudent.java**

```
package student.Fulltime.BCA;
import java.util.Scanner;
public class BCAStudent
{
	String name,sex;
	int age;
	Scanner sc =new Scanner(System.in);
	public void getdata()
	{
		System.out.println("Enter Student Name: ");
		name=sc.nextLine();
		System.out.println("Enter Student Sex: ");
		sex=sc.nextLine();
		System.out.println("Enter Student Age: ");
		age=sc.nextInt();
	}
	public void display()
	{
		System.out.println("Student details are as follows: ");
		System.out.println("Student Name: "+name);
		System.out.println("Student Sex: "+sex);
		System.out.println("Student Age: "+age);
	}
}
```

**Program-2: PackageDemo.java**

```
import student.Fulltime.BCA.BCAStudent;
public class PackageDemo
{
	public static void main(String args[])
```

```
	{
		BCAStudent std=new BCAStudent();
		std.getdata();
		std.display();
	}
}
```

**Program Output:**

```
Compile first: javac BCAStudent.java
Compile next: javac PackageDemo.java
Run: java PackageDemo
Enter Student Name:
Keerthi
Enter Student Sex:
Male
Enter Student Age:
29
Student details are as follows:
Student Name: Keerthi
Student Sex: Male
Student Age: 29
```