AIM OF THE PRACTICAL

In a peaceful town, a budding programmer named Sam was tasked by her mentor, Ms. Java, to declare an integer variable named age, assign it the value of 25, and display it in a sentence. Sam quickly took to her computer and, with focus, wrote a program that would show "25 is the age of Sam." on the screen. Pleased with her work, Sam proudly presented her solution to Ms. Java, who commended her for her precise and clear coding skills.

CODE :

```
public class Practical1 {
    public static void main(String[] args)
    {
        int age;
        age=25;
        System.out.println(age+ " is the age of Sam.");
        System.out.println("BY 23DIT019");
    }

}
```

OUTPUT :

```
25 is the age of Sam.
By 23DIT019
```

CONCLUSION :

In this practical , I learned about the basic structure of java program and how to declare a variable as well as how to assign value to it and how to print it.

Java program that converts a string entered by the user to Morsecode or vice versa. It will require the implementation of data structures, including arrays, loops, and conditional statements.

• Create two arrays - one to contain the strings of letters to be converted and one to contain the Morse codes.

• In the program's main method, prompt the user for input to choose between the string or Morse.

• For Morse code conversion, read a string from the user; use conditional statements, looping, and array methods to convert the string to Morse-code.

• For string conversion, read in a Morse-coded string from the user; use

arrays, conditional statements, and looping to convert Morse code to a string

CODE :

```
import java.util.Scanner;
class Practical2
{
   public static void main(String args[])
   {
      char[] a={'A','B','C','D'};
      String[] b={"...-","..-.",".-..","-..."};

      int n;

      do {
         System.out.println("CHOOSE \n FROM 1. ENG TO MORSE \t 2. MORSE TO
ENGLISH");
         Scanner obj = new Scanner(System.in);
         int x=obj.nextInt();

         if(x==1){
         System.out.println("CHAR TO MORSE::::: \n");
         System.out.println("ENTER YOUR CHARACTER: ");
         Scanner obj1 = new Scanner(System.in);
         String line=obj1.nextLine();

         for(int i=0;i<line.length();i++){
            char s = line.charAt(i);
            if(s==a[i]){
               System.out.print(b[i]);
            }
         }

         }
         else {
         System.out.println("MORSE TO CHAR::::: \n");
         System.out.println("ENTER YOUR MORSE CODE (use spaces to separate each morse
character): ");
         Scanner obj2 = new Scanner(System.in);
         String line = obj2.nextLine();
         String[] s2 = line.split(" ");
         String cod = "";
         for (int i = 0; i < s2.length; i++) {
         int index = 0;
         for (int j = 0; j < b.length; j++) {
            if (b[j].equals(s2[i])) {
               index = j;
            }
         }
         cod = cod + a[index];
```

```
        }
        System.out.println("String : " + cod);
        }
        System.out.println("\n Press 1 to continue further and 2 to exit: ");
        Scanner obj5= new Scanner(System.in);
        n=obj5.nextInt();
        } while (n!=2);
        System.out.println("By 23DIT019.");
}
}
```

OUTPUT :

```
CHOOSE
 FROM 1. ENG TO MORSE     2. MORSE TO ENGLISH
1
CHAR TO MORSE:::::

ENTER YOUR CHARACTER:
AB
.-.-.-.
 Press 1 to continue further and 2 to exit:
1
CHOOSE
 FROM 1. ENG TO MORSE     2. MORSE TO ENGLISH
2
MORSE TO CHAR:::::

ENTER YOUR MORSE CODE (use spaces to separate each morse character):
.-.-.-.
String : A

 Press 1 to continue further and 2 to exit:
2
By 23DIT019.
```

CONCLUSION :

From this practical I learned about the use of loop and conditional statements in java programming . Here I also learned about the declaration of string and character as well.

A typical mobile number in India is "+91-AA-BBB-CCCCC". Where the first two digits (AA)indicate a mobile system operator, the next three (BBB) denote the mobile switching code(MSC) while the remaining five digits (CCCCC) are unique to the subscriber. Write an application that takes a mobile number as an input from a user in above mentioned format and display code for mobile system operator, mobile switching code and last 5 digits which are unique to subscriber.Ex. For an input +91-94-999-65789, output should be :Mobile system operator code is 94 MSC is 999 Unique code is 65789

CODE :

```
import java.util.Scanner;
```

```java
public class Practical3 {
    public static void main(String args[])
    {
        Scanner sc=new Scanner(System.in);
        System.out.println("Enter the mobile number :");
        String mob=sc.nextLine();
        System.out.println("Operator code :"+mob.substring(0,2));
        System.out.println("MSD code :"+mob.substring(2,5));
        System.out.println("Unique code :"+mob.substring(5,10));
        System.out.println("BY 23DIT019");

    }
}
```

OUTPUT :

```
Enter the mobile number :
9016924009
Operator code :90
MSD code :169
Unique code :24009
By 23DIT019
```

CONCLUSION :

From this practical I learned about the method of string called ***substring*** and how to use it. Substring method is used to display the desired length of string only.

An electric appliance shop assigns code 1 to motor,2 to fan,3 to tube and 4 for wires. All other items have code 5 or more. While selling the goods, a sales tax of 8% to motor,12% to fan,5% to tube light,7.5% to wires and 3% for all other items is charged. A list containing the productcode and price in two different arrays. Write a java program using switch statement to prepare the bill.

CODE :

```java
import java.util.Scanner;

public class Practical4 {
```

```
public static void main(String args[])
{
   Scanner sc=new Scanner(System.in);
   String[] product_list={"Motor","Fan","Tube","Wire"};
   float[] rate={1000,1500,500,100,200};
   char dec;
   int cnt=0;
   float total=0.00f;
   float price1=0.00f;
   float price2=0.00f;
   float price3=0.00f;
   float price4=0.00f;
   float price5=0.00f;
   do{
   System.out.println("********Menu********");
   System.out.println("1. Purchase Motor");
   System.out.println("2. Purchase Fan");
   System.out.println("3. purchase Tube");
   System.out.println("4. Purchase Wire");
   System.out.println("5. Purchase Other items.");
   System.out.println("6. Generate bill.");
   System.out.println("**********************");
   System.out.println("Enter your option :");
   int opt=sc.nextInt();
   switch(opt)
   {
      case 1 :
      cnt++;

      System.out.println("Enter the number of units of motor :");
      int unit=sc.nextInt();
      price1 = (rate[0]+((price1+(rate[0]*0.08f))))*unit;
      System.out.println("Total price is :"+price1);
      total+=price1;
```

```
        break;
        case 2 :

        System.out.println("Enter the number of units of fans :");
        int unit1=sc.nextInt();
        price2 = (rate[1]+((price2+(rate[1]*0.12f))))*unit1;
        System.out.println("Total price is :"+price2);
        total+=price2;
        break;
        case 3 :

        System.out.println("Enter the number of units of tubes :");
        int unit2=sc.nextInt();
        price3 = (rate[2]+((price3+(rate[2]*0.05f))))*unit2;
        System.out.println("Total price is :"+price3);
        total+=price3;
        break;
        case 4:

        System.out.println("Enter the number of units of wires :");
        int unit3=sc.nextInt();
        price4 = (rate[3]+((price4+(rate[3]*0.075f))))*unit3;
        System.out.println("Total price is :"+price4);
        total+=price4;
        break;
        case 5 :

        System.out.println("Enter the number of units  :");
        int unit4=sc.nextInt();
        price5 = (rate[4]+((price5+(rate[4]*0.03f))))*unit4;
        System.out.println("Total price is :"+price5);
        total+=price5;
        break;
        case 6:
```

```
            System.out.println("Total billing amount is :"+total);
            break;
        }
        System.out.println("Enter 'y' if you want to purchase more items or 'n' to exit..." );
        dec=sc.next().charAt(0);
    }while('y'==dec);
    System.out.println("BY 23DIT019");
    }

}
```

OUTPUT :

```
********Menu********
1. Purchase Motor
2. Purchase Fan
3. purchase Tube
4. Purchase Wire
5. Purchase Other items.
6. Generate bill.
********************
Enter your option :
1
Enter the number of units of motor :
2
Total price is :2160.0
Enter 'y' if you want to purchase more items or 'n' to exit...
y
********Menu********
1. Purchase Motor
2. Purchase Fan
3. purchase Tube
4. Purchase Wire
5. Purchase Other items.
6. Generate bill.
********************
Enter your option :
4
Enter the number of units of wires :
5
Total price is :537.5
Enter 'y' if you want to purchase more items or 'n' to exit...
y
********Menu********
1. Purchase Motor
2. Purchase Fan
3. purchase Tube
4. Purchase Wire
5. Purchase Other items.
6. Generate bill.
********************
Enter your option :
6
Total billing amount is :2697.5
Enter 'y' if you want to purchase more items or 'n' to exit...
n
By 23DIT019
```

CONCLUSION :

In this practical , I learned about the use of switch statement along with do while loop in java programming.

Create a Java program that simulates a guessing game, where the computer picks a random number between 1 and 100 andthe user has to guess it. We can use the Scanner class to 1 getuser input and a loop to allow multiple guesses.

- **Prompt the user to guess the number and keep track of thenumber of attempts they make.**
- **Use if-else statements to give feedback like too low or toohigh compared to the number.**
- **Use a loop to allow the user to guess again until they guessthe correct Number**

CODE :

```
import java.util.Random;
import java.util.Scanner;
public class Practical5 {
    public static void main(String[] args)
    {
        Scanner sc=new Scanner(System.in);
        Random r=new Random();
        int user_input;
        int random;
       int n=0;
       random=r.nextInt(100);
        do{
           System.out.println("Enter your guess :");
           user_input=sc.nextInt();
           if(user_input==random)
           {
               System.out.println("Your guess is correct !!!");
           }
           else if(user_input<(random/2))
           {
            System.out.println("Your guess is too low.");
           }
           else if(user_input>(random/2))
```

```
        {
         System.out.println("Your guess is too high.");
        }
      }while(user_input!=random || n==5);

      System.out.println("Random input :"+random);
      System.out.println("BY 23DIT019");
   }

}
```

OUTPUT :

```
Enter your guess :
34
Your guess is too high.
Enter your guess :
12
Your guess is too low.
Enter your guess :
56
Your guess is too high.
Enter your guess :
33
Your guess is correct !!!
Random input :33
By 23DIT019
```

CONCLUSION :

From this practical I learned about the ***random class*** . Random class is basically used to select a random value from a particular range of values eg. If we want a random value in the range of 0 to 100 then we can do it by using the syntax : ***r(object of random class).nextInt(100)*** , this will give any random number between 0 to 100.

Imagine you're tasked with creating a function that takes a string and a number. The goal is to repeat the first few characters of the string a specified number of times. If the string is shorter than the specified length, you should repeat whatever characters are available. How would you approach this problem?

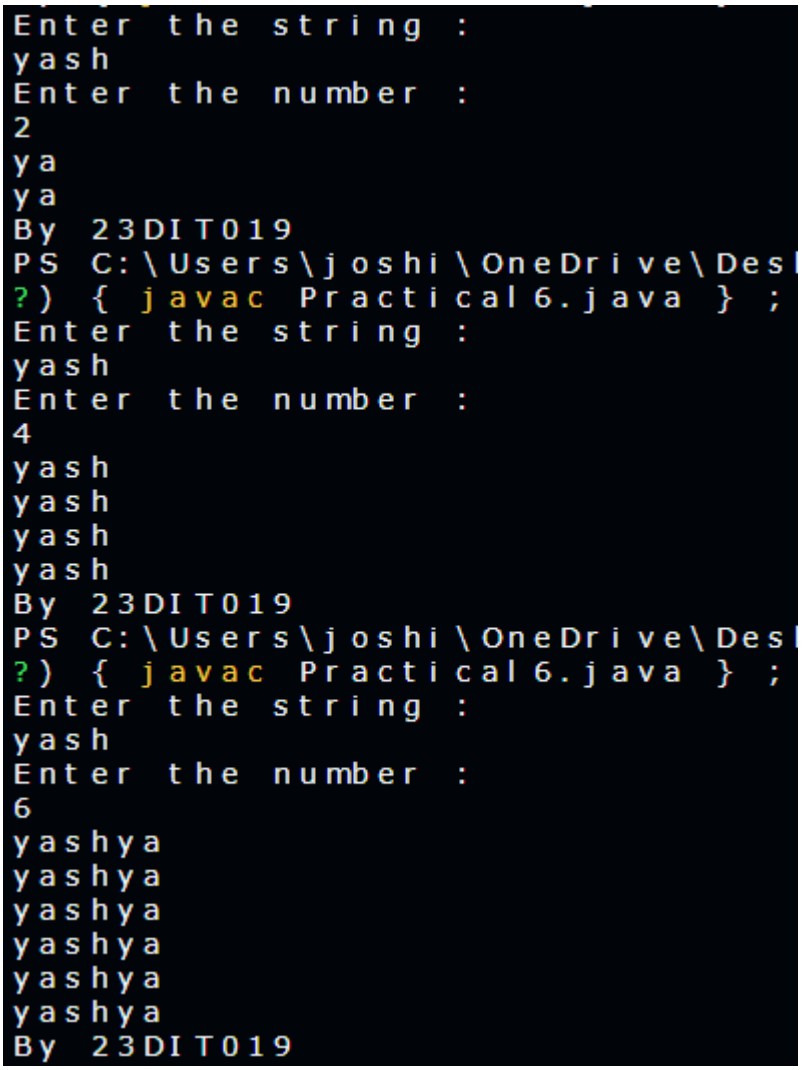
CODE :

```
import java.util.Scanner;
```

```
public class Practical6 {
    public static void main(String[] args)
    {
        Scanner sc=new Scanner(System.in);
        System.out.println("Enter the string :");
        String name=sc.nextLine();
        System.out.println("Enter the number :");
        int number=sc.nextInt();
        fun(name,number);
    }
    public static void fun(String name,int number)
    {
        if(number==name.length())
        {
            for(int i=0;i<number;i++)
            {
                System.out.println(name);
            }
        }
        else if(number<name.length())
        {
            for(int i=0;i<number;i++)
            {
            System.out.println(name.substring(0,number));
            }
        }
        else if(number>name.length())
        {
            for(int i=0;i<number;i++)
            {
            System.out.println(name+name.substring(0,number-
name.length()));
            }
        }
```

```
    System.out.println("BY 23DIT019");
   }

}
```

OUTPUT :



CONCLUSION :

In this practical , I learned about how to take user input of string and how to use substring method of string class.

Imagine you're working with an array of integers, and your task is to count how many times the number 9 appears in the array. How would you write a Java program that efficiently determines this count, regardless of the array's size or the position of the

numbers?

CODE :

```
import java.util.Scanner;

public class Practical7 {
    public static void main(String[] args)
    {
        Scanner sc=new Scanner(System.in);
        int size;

        System.out.println("Enter the size of the array :");
        size=sc.nextInt();
        int[] arr=new int[size];
        int cnt=0;
        for(int i=0;i<size;i++)
        {
          arr[i]=sc.nextInt();
        }
        for(int i=0;i<size;i++)
        {
          if(arr[i]==9)
          {
             cnt++;
          }
        }
        System.out.println("9 appears "+cnt+" times in the given array.");
        System.out.println("BY 23DIT019");
    }

}
```

OUTPUT :

```
Enter the size of the array :
5
1
2
9
5
9
9 appears 2 times in the given array.
By 23DIT019
```

CONCLUSION :

In this practical , I learned about how to take array as input . I also learned about how to traverse through the array and count the number of occurences of a particular array element.

Suppose you are developing a text transformation tool. Your task is to create a function that takes a string and transforms it such that every character in the original string is doubled. For example, "The" becomes "TThhee". How would you design and implement this function in Java to handle any input string effectively?

CODE :

```
import java.util.Scanner;

public class Practical8 {
    public static void main(String[] args)
    {
        Scanner sc=new Scanner(System.in);
        System.out.println("Enter the string :");
        String str=sc.nextLine();
        fun(str);

    }
    public static void fun(String str)
    {
        String new_str="";
        for(int i=0;i<str.length();i++)
        {
            new_str=new_str+str.charAt(i)+str.charAt(i);
        }
```

```
        System.out.println(new_str);
        System.out.println("BY 23DIT019");
    }

}
```

OUTPUT :

```
Enter the string :
yash
yyaasshh
By 23DIT019
```

CONCLUSION :

In this practical I learned about how to take string as input and how to access particular character from string using charAt() method of string class . I also learned how to insert individual character in an empty string.

you're a cybersecurity analyst investigating a suspicious string of characters. You need to analyze it thoroughly to uncover any hidden patterns or anomalies. The number of characters in the string to understand its size, Standardize the string for case-insensitive comparisons, Highlight potential keywords or acronyms, and Identify palindromes or potential encryption methods.
Sort the string: Analyze character distribution and frequency.

CODE :

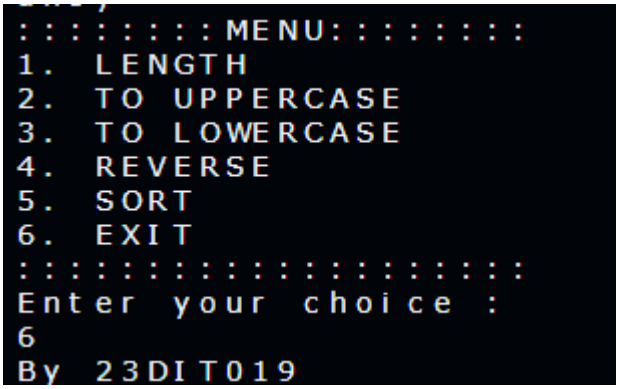
```
import java.util.Arrays;
import java.util.Scanner;
public class Practical10 {
   public static void main(String[] args)
   {
      Scanner sc=new Scanner(System.in);
      String str;
      System.out.println("Enter the string :");
      str=sc.nextLine();
      int option;
      do {
         System.out.println("::::::::MENU::::::::");
         System.out.println("1. LENGTH ");
```

```
        System.out.println("2. TO UPPERCASE ");
        System.out.println("3. TO LOWERCASE ");
        System.out.println("4. REVERSE ");
        System.out.println("5. SORT");
        System.out.println("6. EXIT");
        System.out.println("::::::::::::::::::::");
        System.out.println("Enter your choice :");
        option=sc.nextInt();
        switch(option)
        {
         case 1:
         int cnt=0;
         try{
         while(str.charAt(cnt)!='\0')
         {
            cnt++;
         }

         }
      catch(StringIndexOutOfBoundsException e)
      {

      }
      System.out.println("Length of string is :"+cnt);

      System.out.println("Length of string using function is :"+str.length());
      break;
         case 2 :
         System.out.println("String in uppercase :"+str.toUpperCase());
         String upper="";
         for(int i=0;i<str.length();i++)
         {
            int ch=str.charAt(i);
            if(ch>=92 && ch<=122)
            {
               ch-=32;
               upper+=(char)ch;
            }
            else
            {
               upper=str;
               break;
            }
         }
         System.out.println("String in uppercase (manually) :"+upper);
         break;
         case 3:
         System.out.println("String in lowercase :"+str.toLowerCase());
         String lower="";
         for(int i=0;i<str.length();i++)
```

```
            {
               int low=str.charAt(i);
               if(low>=65 && low<=90)
               {
                  low+=32;
                  lower+=(char)low;
               }
               else
               {
                  lower=str;
                  break;
               }
            }
            System.out.println("String in lower manually :"+lower);
            break;
            case 4:
            char ch2;
            String rev=" ";
            for(int i=str.length()-1;i>=0;i--)
            {
               ch2=str.charAt(i);
               rev+=ch2;
            }
            System.out.println("Reversed string is :"+rev);
            break;
            case 5:
            char ch1[]=new char[str.length()];
            for(int i=0;i<str.length();i++)
            {
               ch1[i]=str.charAt(i);
            }
            Arrays.sort(ch1);
            String str1="";
            for(int i=0;i<str.length();i++)
            {
               str1+=ch1[i];
            }
            System.out.println(str1);
            case 6:
            break;
           }
      } while (option!=6);
      System.out.println("By 23DIT019");

   }

}
```

OUTPUT :


```
Enter the string :
yash
::::::::MENU:::::::
1. LENGTH
2. TO UPPERCASE
3. TO LOWERCASE
4. REVERSE
5. SORT
6. EXIT
::::::::::::::::::::
Enter your choice :
1
Length of string is :4
Length of string using function is :4
::::::::MENU:::::::
1. LENGTH
2. TO UPPERCASE
3. TO LOWERCASE
4. REVERSE
5. SORT
6. EXIT
::::::::::::::::::::
Enter your choice :
2
String in uppercase :YASH
String in uppercase (manually) :YASH
::::::::MENU:::::::
1. LENGTH
2. TO UPPERCASE
3. TO LOWERCASE
4. REVERSE
5. SORT
6. EXIT
::::::::::::::::::::
Enter your choice :
3
String in lowercase :yash
String in lower manually :yash
::::::::MENU:::::::
1. LENGTH
2. TO UPPERCASE
3. TO LOWERCASE
4. REVERSE
5. SORT
6. EXIT
::::::::::::::::::::
Enter your choice :
4
Reversed string is : hsay
::::::::MENU:::::::
1. LENGTH
2. TO UPPERCASE
3. TO LOWERCASE
4. REVERSE
5. SORT
6. EXIT
::::::::::::::::::::
Enter your choice :
5
ahsy
```



CONCLUSION :

In this practical , I learned about the use of different methods of string class . I learned about how to find the length of string using length() method as well as using loop . I also learned about how to convert string to uppercase or lowercase using toUpperCase() and toLowerCase() methods as well as manually .

You're tasked with creating a basic encryption algorithm for your college project. The first step involves manipulating a given string, "CHARUSAT UNIVERSITY".
Calculate the number of characters in the string to understand its structure, Identify the target character: The character to be replaced is 'H'. Replace the target character: Substitute 'H' with the first letter of your name. For instance, if your name starts with 'A', replace 'H' with 'A'. and Transform all characters to lowercase for consistency, and display the modified string.

CODE:

```
import java.util.Scanner;

public class Practical11 {
   public static void main(String[] args)
   {
      Scanner sc=new Scanner(System.in);
      String str,name;
      System.out.println("Enter the string :");
      str=sc.nextLine();
      int option;
      do {
        System.out.println("::::::::::::::::::::MENU::::::::::::::::::::::");
        System.out.println("1. LENGTH ");
```

```
        System.out.println("2. REPLACE 'H' WITH FIRST LETTER OF NAME ");
        System.out.println("3. TO LOWERCASE ");
        System.out.println("4. EXIT");
        System.out.println("::::::::::::::::::::::::::::::::::::::::::::::::::");
        System.out.println("Enter your choice :");
        option=sc.nextInt();
        switch(option)
        {
         case 1 :
         System.out.println("Length of the string is :"+str.length());
         break;
         case 2:

         try{
         Scanner sc1=new Scanner(System.in);
         System.out.println("Enter your name :");
         name=sc1.nextLine();
         for(int i=0;i<str.length();i++)
          {
          if(str.charAt(i)=='H')
          {
          str= str.replace('H',name.charAt(0));
          }
          }
          System.out.println("Changed string is :"+str);
         }
         catch(StringIndexOutOfBoundsException e)
         {

         }
         break;
         case 3:
         System.out.println("String in lowercase :"+str.toLowerCase());
         break;
         case 4:
         break;
        }
      } while (option!=4);
      System.out.println("By 23DIT019");
   }

}
```

OUTPUT :

```
Enter the string :
CHARUSAT UNIVERSITY
::::::::::::::::::::MENU:::::::::::::::::::::::
1. LENGTH
2. REPLACE 'H' WITH FIRST LETTER OF NAME
3. TO LOWERCASE
4. EXIT
::::::::::::::::::::::::::::::::::::::::::::::::
Enter your choice :
1
Length of the string is :19
::::::::::::::::::::MENU:::::::::::::::::::::::
1. LENGTH
2. REPLACE 'H' WITH FIRST LETTER OF NAME
3. TO LOWERCASE
4. EXIT
::::::::::::::::::::::::::::::::::::::::::::::::
Enter your choice :
2
Enter your name :
YASH
Changed string is :CYARUSAT UNIVERSITY
::::::::::::::::::::MENU:::::::::::::::::::::::
1. LENGTH
2. REPLACE 'H' WITH FIRST LETTER OF NAME
3. TO LOWERCASE
4. EXIT
::::::::::::::::::::::::::::::::::::::::::::::::
Enter your choice :
3
String in lowercase :cyarusat university
::::::::::::::::::::MENU:::::::::::::::::::::::
1. LENGTH
2. REPLACE 'H' WITH FIRST LETTER OF NAME
3. TO LOWERCASE
4. EXIT
::::::::::::::::::::::::::::::::::::::::::::::::
Enter your choice :
4
By 23DIT019
```

CONCLUSION :

In this practical , I learned more about string like , how we can replace a particular character from string using replace method of string class as well as manually by converting string into character array .

You're a budding Java programmer working on a currency conversion application. Your initial task is to convert Pounds to Rupees. To practice different input methods, you decide to implement two approaches: command-line arguments and user input using the Scanner class.

CODE :

```
import java.util.Scanner;

public class Practical12 {
   public static void main(String[] args)
   {
      Scanner sc=new Scanner(System.in);
```

```
        int rupees;
        int pounds;
        int option;
        do {
           System.out.println("::::::::MENU::::::::");
           System.out.println("1. Rupees to pounds.");
           System.out.println("2. Pound to rupees.");
           System.out.println("3. EXIT");
           System.out.println("::::::::::::::::::::::");
           System.out.println("Enter the option :");
           option=sc.nextInt();
           switch(option)
           {
            case 1 :
            System.out.println("Enter the amount in rupees :");
            rupees=sc.nextInt();
            pounds=rupees*100;
            System.out.println("Amount in pounds :"+pounds);
            break;
           case 2 :
           System.out.println("Enter the amount in pounds :");
           pounds=sc.nextInt();
           rupees=pounds/100;
           System.out.println("Amount in rupees :"+rupees);
           break;
           case 3 :
           break;
           }

      } while (option!=3);
          System.out.println(“By 23DIT019”);
    }
}
```

OUTPUT :

```
::::::::MENU:::::::
1. Rupees to pounds.
2. Pound to rupees.
3. EXIT
::::::::::::::::::::
Enter the option :
1
Enter the amount in rupees :
200
Amount in pounds :20000
::::::::MENU:::::::
1. Rupees to pounds.
2. Pound to rupees.
3. EXIT
::::::::::::::::::::
Enter the option :
2
Enter the amount in pounds :
200
Amount in rupees :2
::::::::MENU:::::::
1. Rupees to pounds.
2. Pound to rupees.
3. EXIT
::::::::::::::::::::
Enter the option :
3
By 23DIT019
```

CONCLUSION :

In this practical , I learned about how to take input as command line argument in java .

Create a class called Employee that includes three pieces of information as instance variables—a first name (type String), a last name (type String), and a monthly salary (double). Your class should have a constructor that initializes the three instance variables. Provide a set and a get method for each instance variable. If the monthly salary is not positive, set it to 0.0. Write a test application named EmployeeTest that demonstrates class Employee's capabilities. Create two Employee objects and display each object's yearly salary. Then give each Employee a 10% raise and display each Employee's yearly salary again.

CODE ;

```
import java.util.Scanner;
```

```
class employee
{
   String first_name;
   String last_name;
   double salary;
   Scanner sc=new Scanner(System.in);
   public employee()
   {
      first_name="NULL";
      last_name="NULL";
      salary=0.0f;
   }
   public void getFirstname()
   {
      System.out.println("Employee's first name is :"+first_name);
   }
   public void getLastname()
   {
      System.out.println("Employee's last name is :"+last_name);
   }
   public void getSalary()
   {
      System.out.println("Employee's salary is :"+salary);
   }
   public void setFirstname()
   {
      System.out.println("Enter the first name of an employee :");
      first_name=sc.nextLine();
   }
   public void setLastname()
   {
      System.out.println("Enter the last name of an employee :");
      last_name=sc.next();
   }
   public void setSalary()
   {
      System.out.println("Enter the salary of an employee :");
      salary=sc.nextDouble();
   }
   public void salarycheck()
   {
      if(salary<0.0)
      {
        salary=0.0;
      }
   }
   public void salaryraise()
   {
      salary+=(salary*0.1);
      double yearly_salary=salary*12.0;
```

```
        System.out.println("Employee's yearly salary is :"+yearly_salary);
    }

}
public class EmployeeTest {
    public static void main(String[] args) {
        employee e=new employee();
        employee e1=new employee();
        e.setFirstname();
        e.setLastname();
        e.setSalary();
        e.salarycheck();
        e.getFirstname();
        e.getLastname();
        e.salaryraise();
        e1.setFirstname();
        e1.setLastname();
        e1.setSalary();
        e1.salarycheck();
        e1.getFirstname();
        e1.getLastname();
        e1.salaryraise();
        System.out.println("By 23DIT019");
    }
}
```

OUTPUT :

```
Enter the first name of an employee :
Yash
Enter the last name of an employee :
Joshi
Enter the salary of an employee :
5000
Employee's first name is :Yash
Employee's last name is :Joshi
Employee's yearly salary is :66000.0
Enter the first name of an employee :
Harsh
Enter the last name of an employee :
Dhameliya
Enter the salary of an employee :
4000
Employee's first name is :Harsh
Employee's last name is :Dhameliya
Employee's yearly salary is :52800.0
By 23DIT019
```

CONCLUSION :

In this practical , I learned about the concept of class and object creation in java .

I learned about the creation of constructors , which are used to initialize the object of class , as well as how to call methods defined in the class in the main method using object . I also learned about how to define get and set methods.

Create a class called Date that includes three pieces of information as instance variables—a month (type int), a day (type int) and a year (type int). Your class should have a constructor that initializes the three instance variables and assumes that the values provided are correct. Provide a set and a get method for each instance variable. Provide a method displayDate that displays the month, day and year separated by forward slashes (/). Write a test application named DateTest that demonstrates class Date's capabilities.

CODE :

```
import java.util.Scanner;

class Date{
   int month;
   int day;
   int year;
   Scanner sc=new Scanner(System.in);
   Date()
   {
      month=0;
      day=0;
      year=0;
   }
   public void setmonth()
   {
      System.out.println("Enter the month :");
      month=sc.nextInt();
   }
   public void setday()
   {
      System.out.println("Enter the day :");
      day=sc.nextInt();
   }
   public void setyear()
   {
      System.out.println("Enter the year :");
      year=sc.nextInt();
   }
   public void getmonth(){
```

```
        System.out.println("Month : "+month);
    }
    public void getday(){
        System.out.println("Day : "+day);
    }
    public void getyear(){
        System.out.println("Year : "+year);
    }
    public void display()
    {
        System.out.println("Date : "+month+"/"+day+"/"+year);
    }
}
public class DateTest {
    public static void main(String[] args)
    {
        Date d=new Date();
        d.setmonth();
        d.setday();
        d.setyear();
        d.getday();
        d.getmonth();
        d.getyear();
        d.display();
        System.out.println("By 23DIT019");
    }

}
```

OUTPUT :

```
Enter the month :
10
Enter the day :
7
Enter the year :
2005
Day : 7
Month : 10
Year : 2005
Date : 10/7/2005
By 23DIT019
```

CONCLUSION :

In this practical , I learned about the concept of class and object creation in java .
I learned about the creation of constructors , which are used to initialize the object of class , as well as how to call methods defined in the class in the main method using object . I also learned about how to define get and set methods.

Write a program to print the area of a rectangle by creating a class named 'Area' taking the values of its length and breadth as parameters of its constructor and having a method named 'returnArea' which returns the area of the rectangle. Length and breadth of rectangle are entered through keyboard.

CODE :

```
import java.util.Scanner;
class Area
{
   int length;
   int breadth;
   Scanner sc=new Scanner(System.in);
   public Area(int length,int breadth)
   {
      this.length=length;
      this.breadth=breadth;
   }
   public int returnArea()
   {
     double area;
     area=length*breadth;
     return (int)area;
   }
}
public class Practical15 {
   public static void main(String[] args) {
       int length,breadth;
       Scanner sc=new Scanner(System.in);
       System.out.println("Enter the length and breadth of the rectangle");
       length=sc.nextInt();
       breadth=sc.nextInt();
      Area ar=new Area(length,breadth);
      System.out.println("Area of rectangle is :"+ar.returnArea());
      System.out.println("By 23DIT019");
   }

}
```

OUTPUT :

```
Enter the length and breadth of the rectangle
3
5
Area of rectangle is :15
By 23DIT019
```

CONCLUSION :

In this practical , I learned about the concept of class and object creation in java .
I learned about the creation of constructors , which are used to initialize the object of class , as well as how to call methods defined in the class in the main method using object . I also learned about how to define get and set methods.

Imagine you're building a scientific calculator application. One crucial feature is handling complex numbers. You decide to create a Complex class to represent complex numbers and perform operations on them.(sum, difference and product)

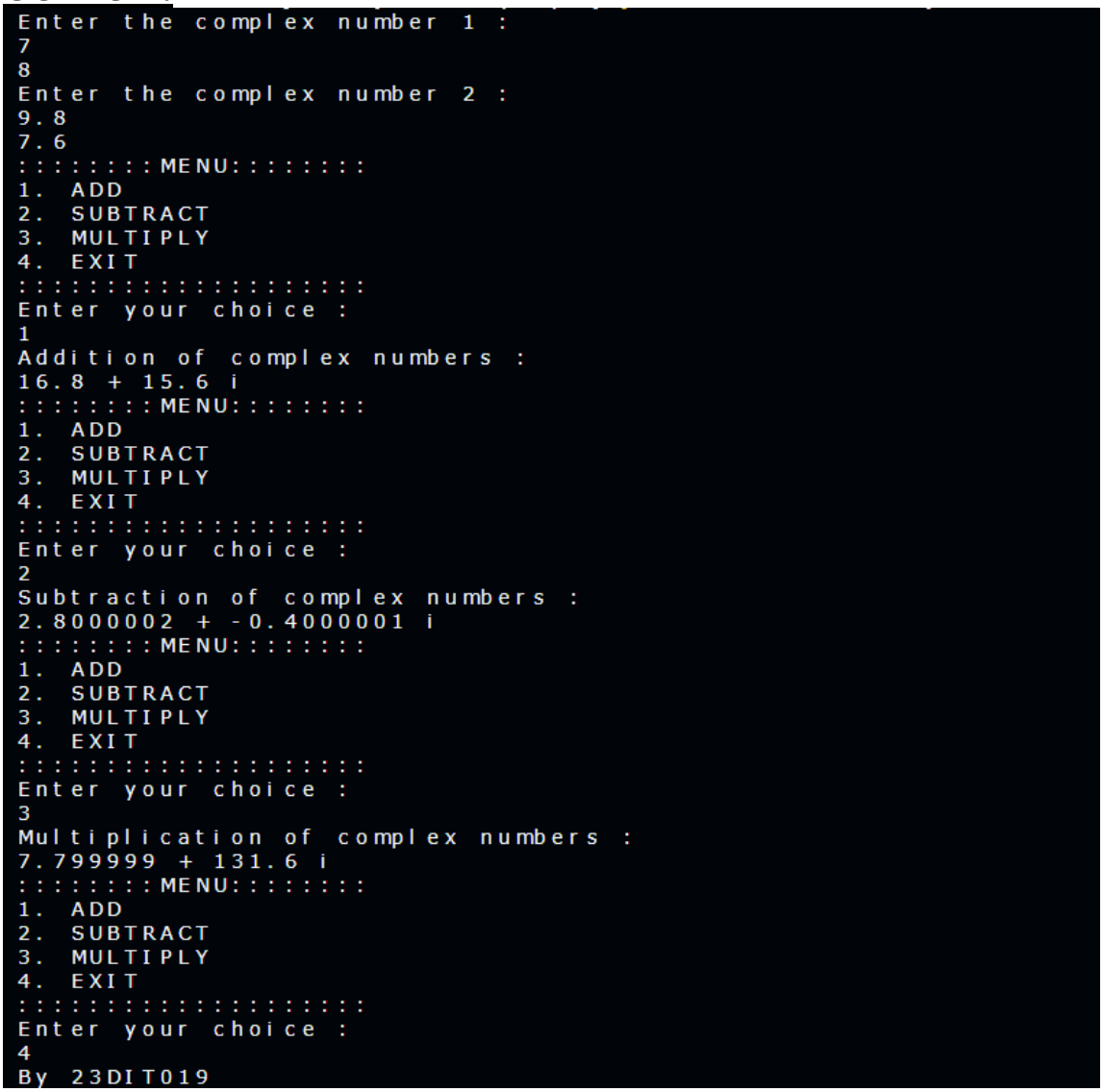
CODE :

```
import java.util.Scanner;

class Complex
{
   float real,complex;
   Complex()
   {
      real=0.0f;
      complex=0.0f;
   }
   public Complex add(Complex c)
   {
      Complex temp=new Complex();
      temp.real=c.real+this.real;
      temp.complex=c.complex+this.complex;
      return temp;
   }
   public Complex sub(Complex c)
   {
      Complex temp=new Complex();
      temp.real=c.real-this.real;
      temp.complex=c.complex-this.complex;
      return temp;
   }
   public Complex mul(Complex c)
   {
      Complex temp=new Complex();
      temp.real=(c.real*this.real)-(c.complex*this.complex);
```

```
        temp.complex=(c.real*this.complex)+(c.complex*this.real);
        return temp;
    }
    public void display()
    {
        System.out.println(this.real+" + "+this.complex+" i");
    }
}
public class Practical16 {
    public static void main(String[] args) {
        Scanner sc=new Scanner(System.in);
        Complex c1=new Complex();
        System.out.println("Enter the complex number 1 :");
        c1.real=sc.nextFloat();
        c1.complex=sc.nextFloat();
        Complex c2=new Complex();
        System.out.println("Enter the complex number 2 :");
        c2.real=sc.nextFloat();
        c2.complex=sc.nextFloat();
        Complex c3=c1.add(c2);
        Complex c4=c1.sub(c2);
        Complex c5=c1.mul(c2);
        int opt;
        do{
            System.out.println("::::::::MENU::::::::");
            System.out.println("1. ADD");
            System.out.println("2. SUBTRACT");
            System.out.println("3. MULTIPLY");
            System.out.println("4. EXIT");
            System.out.println("::::::::::::::::::::");
            System.out.println("Enter your choice :");
            opt=sc.nextInt();
            switch(opt)
            {
                case 1:
                System.out.println("Addition of complex numbers : ");
                c3.display();
                break;
                case 2:
                System.out.println("Subtraction of complex numbers : ");
                c4.display();
                break;
                case 3:
                System.out.println("Multiplication of complex numbers : ");
                c5.display();
                break;
                case 4:
                break;
            }
        }while(opt!=4);
```

```
        System.out.println("By 23DIT019");

    }
}
```

OUTPUT :



CONCLUSION :

In this practical , I learned about the concept of class and object creation in java .
I learned about the creation of constructors , which are used to initialize the object of class , as well as how to call methods defined in the class in the main method using object . I also learned about how to define get and set methods.

```
Enter the complex number 1 :
6
7
Enter the complex number 2 :
2
3
::::::::MENU::::::::
1. ADD
2. SUBTRACT
3. MULTIPLY
4. EXIT
::::::::::::::::::::
Enter your choice :
1
Addition of complex numbers :
8.0 + 10.0 i
::::::::MENU::::::::
1. ADD
2. SUBTRACT
3. MULTIPLY
4. EXIT
::::::::::::::::::::
Enter your choice :
2
Subtraction of complex numbers :
-4.0 + -4.0 i
::::::::MENU::::::::
1. ADD
2. SUBTRACT
3. MULTIPLY
4. EXIT
::::::::::::::::::::
Enter your choice :
3
Multiplication of complex numbers :
-9.0 + 32.0 i
::::::::MENU::::::::
1. ADD
2. SUBTRACT
3. MULTIPLY
4. EXIT
::::::::::::::::::::
Enter your choice :
4
By 23DIT019
```