15.08.2024

ASSIGNEMENT-1
2022503003

Exercise 1: Hello friends:
Write the program and compile the code @command line to execute to greet your friends. Output: Hello, Alice, Bob, Charlie! Good Morning!

CODE:
```
import java.util.*;
class hello{
   public static void main(String[] args){
      if(args.length==0){
         System.out.println("Hello!Good morning!");
      }
      else{
         System.out.printf("Hello,%s,Good Morning!",args[0]);
      }
   }
}
```
```
PS C:\Users\DELL\OneDrive\Desktop\MIT\CODES\FOR GIT HUB\JAVA_BASICS\WEEKLY_LAB_EXERCISE\WEEK 2> java hello.java
john
Hello,john,Good Morning!
PS C:\Users\DELL\OneDrive\Desktop\MIT\CODES\FOR GIT HUB\JAVA_BASICS\WEEKLY_LAB_EXERCISE\WEEK 2>
```

Exercise 2: Error message
Find the maximum Compile time and Run time error messages of simple one line output message. Example • Delete any of the semicolons. • Swap the word public, static, void, main • Omit the word public, static, void, main • Remove the array Subscript around string • Replace Sring with int or float • Replace String[] as String…

CODE:
```
import java.util.*;
class error{
   public static void main(String[] args){
      System.out.println("Hello,world!");
   }
}
```
```
PS C:\Users\2022503003\JAVA\week-2> java error
Hello,world!
```

CODE:
```
import java.util.*;
class error{
   public static void main(String[] args){
      System.out.println("Hello,world!")
   }
}
```
```
PS C:\Users\2022503003\JAVA\week-2> javac error.java
error.java:4: error: ';' expected
        System.out.println("Hello,world!")
                                          ^
1 error
```

CODE:

```
import java.util.*;
class error{
   public static void (String[] args){
      System.out.println("Hello,world!")
   }
}
```

```
PS C:\Users\2022503003\JAVA\week-2> javac error.java
error.java:3: error: <identifier> expected
    public static void (String[] args){
                       ^
error.java:4: error: ';' expected
        System.out.println("Hello,world!")
                                           ^
2 errors
```

CODE:

```
import java.util.*;
class error{
   public static main(String[] args){
      System.out.println("Hello,world!");
   }
}
```

```
PS C:\Users\2022503003\JAVA\week-2> javac error.java
error.java:3: error: invalid method declaration; return type required
    public static main(String[] args){
                  ^
1 error
```

CODE:

```
import java.util.*;
class error{
   public void main(String[] args){
      System.out.println("Hello,world!");
   }
}
```

```
PS C:\Users\2022503003\JAVA\week-2> javac error.java
PS C:\Users\2022503003\JAVA\week-2> java error
Error: Main method is not static in class error, please define the main method
as:
   public static void main(String[] args)
PS C:\Users\2022503003\JAVA\week-2>
```

CODE:

```
import java.util.*;
class error{
   static void main(String[] args){
      System.out.println("Hello,world!");
   }
```

}

```
PS C:\Users\2022503003\JAVA\week-2> javac error.java
PS C:\Users\2022503003\JAVA\week-2> java error
Error: Main method not found in class error, please define the main method as:
   public static void main(String[] args)
or a JavaFX application class must extend javafx.application.Application
```

CODE:

```
import java.util.*;
class error{
   public static void main(String args){
      System.out.println("Hello,world!");
   }
}
```

```
PS C:\Users\2022503003\JAVA\week-2> javac error.java
PS C:\Users\2022503003\JAVA\week-2> java error
Error: Main method not found in class error, please define the main method as:
   public static void main(String[] args)
or a JavaFX application class must extend javafx.application.Application
```

CODE:

```
import java.util.*;
class error{
   public static void main(int[] args){
      System.out.println("Hello,world!");
   }
}
```

```
PS C:\Users\2022503003\JAVA\week-2> java error
Error: Main method not found in class error, please define the main method as:
   public static void main(String[] args)
or a JavaFX application class must extend javafx.application.Application
```

CODE:

```
import java.util.*;
class error{
   public static void main(float[] args){
      System.out.println("Hello,world!");
   }
}
```

```
PS C:\Users\2022503003\JAVA\week-2> java error
Error: Main method not found in class error, please define the main method as:
   public static void main(String[] args)
or a JavaFX application class must extend javafx.application.Application
```

Exercise 3: Conversation

Write a Java program to create a Conversation between Java and Python Java: Hi, I'm Java. What's your name? Python: I'm Python. Nice to meet you! Java: Programmers use me for large-scale systems and performance critical applications. Python: I'm best for rapid development and scripting tasks. Java: I use static typing for early error detection. Python: I use dynamic typing for more flexibility. Java: I run on the JVM, making me portable across many platforms. Python: I'm portable with the Python interpreter on any system. Java: Ideal for enterprise applications and Android apps. Python: Perfect for web development and data analysis. Java: My performance is strong with JVM optimizations. Python: I excel in ease of use and quick development cycles. Java: Use me for performance and large projects. Python: Use me for ease and speed in development. Java: This was great!. Bye for now! Python: Bye!

CODE:

```
import java.util.*;
class hello{
   public static void main(String[] args){
      if(args.length==0){
         System.out.println("Hello!Good morning!");
      }
      else{
         System.out.printf("Hello,%s,Good Morning!",args[0]);
      }
   }
}
```

```
PS C:\Users\2022503003\JAVA\week-2> java conversation
Enter bye! to exit chat!
Java:Hello,python how are u?
Python:I am fine!
Java:I am the best!
Python:who said it?
Java:I have a meeting with my clients unlike you,Bye!
Python:Bye
```

Exercise4: Leap year

Write a program to check if the given year is a leap year or not. Your input is an integer(year).The program should print a Boolean value: True if the year is a leap year, False if not. Constraint year≥1000 Input: 2024 Output: True Input: 2025 Output: False Also find the next leap year

```
import java.util.*;
class leapyear{
   static Boolean checkleap(int a){
      if((a%4==0 && a%100!=0) || a%400==0){
            System.out.println(a+" is a leap year!!");
            return true;
      }
      else{
         System.out.println(a+" is a NOT leap year!!");
         return false;
      }
   }
   public static void main(String[] args){
      Scanner input=new Scanner(System.in);
      System.out.print("ENTER A YEAR:");
      int a=input.nextInt();
```

```
        while(a<=1000){
            System.out.print("CONSTRAINT VIOLATED!TRY AGAIN!!");
            a=input.nextInt();
        }
        checkleap(a);
        while(true){
            if(checkleap(++a)){
                break;
            }
        }
    }
}
```

```
PS C:\Users\2022503003\JAVA\week-2> javac leapyear.java
PS C:\Users\2022503003\JAVA\week-2> java leapyear
ENTER A YEAR:2003
2003 is a NOT leap year!!
2004 is a leap year!!
PS C:\Users\2022503003\JAVA\week-2> java leapyear
ENTER A YEAR:2001
2001 is a NOT leap year!!
2002 is a NOT leap year!!
2003 is a NOT leap year!!
2004 is a leap year!!
```

Exercise 5:Day of the Week

Write a program that takes a date as input and prints the day of the week that date falls on. Read the three int input as m(month), d(day) and y(year). Use 1 of m for January, 2 for February, and so forth. For output print 0 for Sunday, 1 for Monday and so forth. Use the following formula for the Gregorian calendar.

$$y_0 = y - (14 - m) / 12$$
$$x = y_0 + y_0 / 4 - y_0 / 100 + y_0 / 400$$
$$m_0 = m + 12 \times ((14 - m) / 12) - 2$$
$$d_0 = (d + x + (31 \times m_0) / 12) \% 7$$

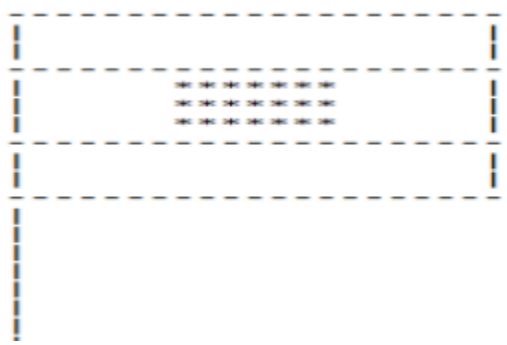
CODE:

```
import java.util.*;
class Dayoftheweek{
    public static void main(String[] args){
        Scanner input=new Scanner(System.in);
        System.out.print("MONTH:");
        int m=input.nextInt();
        System.out.print("DAY:");
        int d=input.nextInt();
        System.out.print("YEAR:");
        int y=input.nextInt();
        int y0=y-(14-m)/12;
        int x=y0+y0/4-y0/100+y0/400;
        int m0=m+12*((14-m)/12)-2;
        int d0=(d+x+(31*m0)/12)%7;
        System.out.println(d0);
        HashMap<Integer,String> mapp=new HashMap<>();
        mapp.put(0,"Sunday");
        mapp.put(1,"Monday");
        mapp.put(2,"Tueday");
        mapp.put(3,"Thursday");
        mapp.put(4,"Fridday");
```

```
        mapp.put(5,"Saturday");
        String f=mapp.get(d0);
        System.out.println("The day is "+f);
    }
}
```

```
PS C:\Users\2022503003\JAVA\week-2> javac Dayoftheweek.java
PS C:\Users\2022503003\JAVA\week-2> java Dayoftheweek
MONTH:10
DAY:19
YEAR:2004
2
The day is Tueday
PS C:\Users\2022503003\JAVA\week-2> java Dayoftheweek
MONTH:12
DAY:5
YEAR:2004
0
The day is Sunday
```

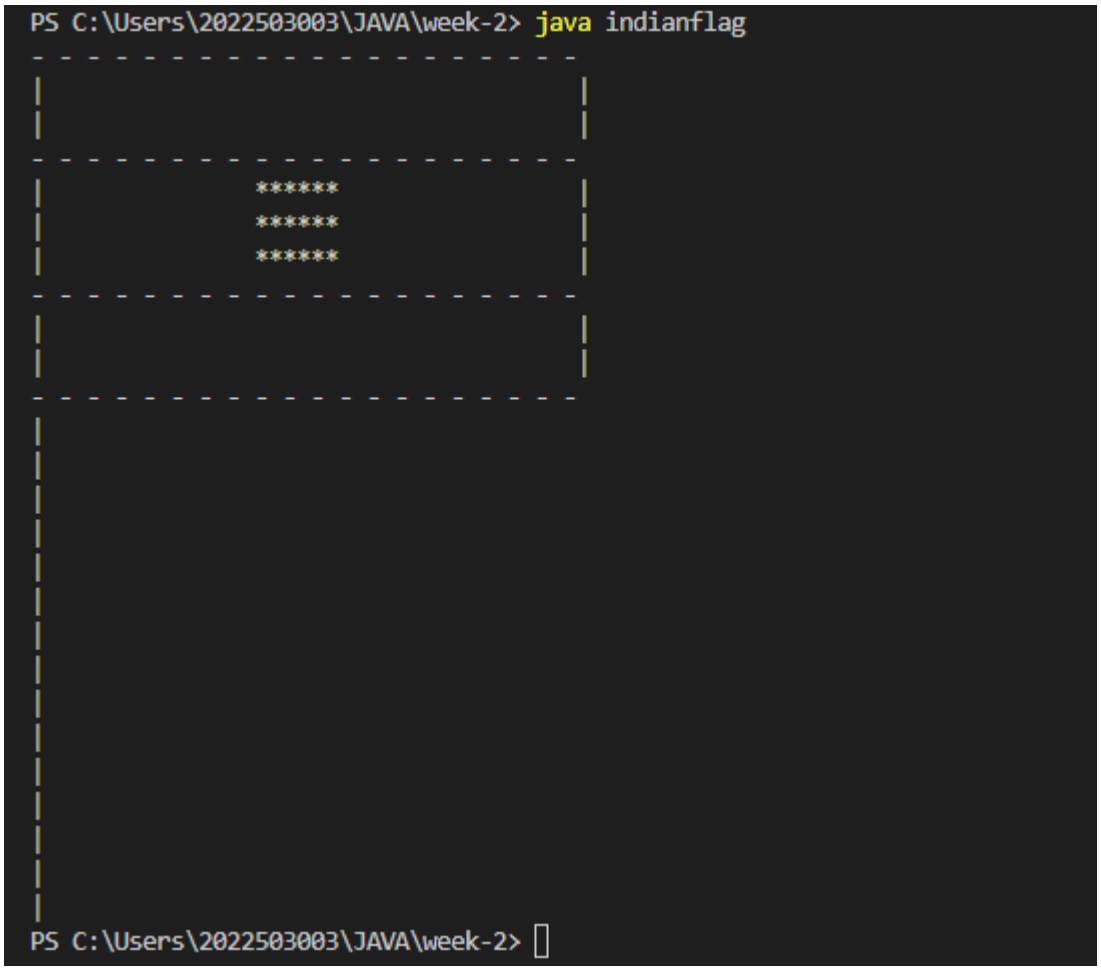
Exercise 6: Write a Java program to create a Indian Flag



```
class indianflag{
    static void o_line(){
        for(int i=0;i<20;i++){
            System.out.print("- ");
        }
        System.out.println();
    }
    static void v_line(){
        System.out.printf("|%38s|\n","");
    }
    static void m_line(){
        System.out.printf("|%15s******%17s|\n","","");
    }
    static void b_line(){
        for(int i=0;i<15;i++){
            System.out.println("|");
        }
    }
    public static void main(String[] args){
        o_line();
        v_line();
```

```
        v_line();
        o_line();
        m_line();
        m_line();
        m_line();
        o_line();
        v_line();
        v_line();
        o_line();
        b_line();
    }

}
```



Exercise 7: Model AND gate

Write a program to model the AND gate using the linear combination of inputs formula Y=Bias +W0·X1+W1·X2 where X1 and X2 are the input values, and y is the output, determine the values for the weights W0 and W1, and the bias term that will correctly model the behavior of a logical AND gate. Use the condition that Y>0.5 results in output 1 and Y≤0.5 results in output 0.

import java.util.Scanner;

CODE:

```
public class modelAnd {
   public static void main(String[] args) {
      Scanner scanner = new Scanner(System.in);
      double bias = -0.5 ;
      int w1 = 1 , w2 = 1 ;

      System.out.print("Enter x1 : ");
      int x1 = scanner.nextInt();
      System.out.print("Enter x2 : ");
      int x2 = scanner.nextInt();

      double y =bias + (w1*x1) + (w2*x2);

      if( y > 0.5 ){
         System.out.println(1);
      }
      else if( y <= 0.5){
         System.out.println(0);
      }

   }
}
```

```
PS C:\Users\DELL\OneDrive\Desktop\MIT\CODES\FOR GIT HUB\JAVA_BASICS\WEEKLY_LAB_EXERCISE\WEEK 2> java modelAnd.java
Enter x1 : 1
Enter x2 : 0
0
PS C:\Users\DELL\OneDrive\Desktop\MIT\CODES\FOR GIT HUB\JAVA_BASICS\WEEKLY_LAB_EXERCISE\WEEK 2> java modelAnd.java
Enter x1 : 1
Enter x2 : 1
1
PS C:\Users\DELL\OneDrive\Desktop\MIT\CODES\FOR GIT HUB\JAVA_BASICS\WEEKLY_LAB_EXERCISE\WEEK 2>
```

Exercise 8: Write a program that converts a given integer into its equivalent words representation. The program should handle negative numbers and checks if the input is within the specified range of 0 to 999. Input 123 Output One Hundred and Twenty Three

CODE:

```
import java.util.*;
class one_s{
   String s1;
   HashMap<Integer,String> digit_1=new HashMap<>();
   one_s(){
      digit_1.put(0,"");
      digit_1.put(1,"One");
      digit_1.put(2,"Two");
      digit_1.put(3,"Three");
      digit_1.put(4,"Four");
```

```
        digit_1.put(5,"Five");
        digit_1.put(6,"Six");
        digit_1.put(7,"Seven");
        digit_1.put(8,"Eight");
        digit_1.put(9,"Nine");
    }
    void one(ArrayList<Integer> n){
        s1=digit_1.get(n.get(n.size()-1));
        if (n.size()==1){
            System.out.println("The one digit number ----> "+s1);
        }
    }
}
class two_s extends one_s{
    String s2,x;
    HashMap<Integer,String> digit_2=new HashMap<>();
    two_s(){
        digit_2.put(0,"");
        //for eleven to ninteen
        digit_2.put(1,"");
        digit_2.put(2,"Twenty");
        digit_2.put(3,"Thirty");
        digit_2.put(4,"Fourty");
        digit_2.put(5,"Fifty");
        digit_2.put(6,"Sixty");
        digit_2.put(7,"Seventy");
        digit_2.put(8,"Eighty");
        digit_2.put(9,"Ninenty");
    }
    void two(ArrayList<Integer> n){
        if(n.get(n.size()-2)==1){
            int b=n.get(n.size()-1);
            HashMap<Integer,String> special_x=new HashMap<>();
            special_x.put(0,"Ten");
            special_x.put(1,"Eleven");
            special_x.put(2,"Twelve");
            special_x.put(3,"Thirteen");
            special_x.put(4,"Fourteen");
            special_x.put(5,"Fifteen");
            special_x.put(6,"Sixteen");
            special_x.put(7,"Seventeen");
            special_x.put(8,"Eighteen");
            special_x.put(9,"Nineteen");
            x =special_x.get(b);
            System.out.println("The Speical Two digit number -----> "+x);
        }
        else{
            one(n);
            s2=digit_2.get(n.get(n.size()-2));
            if( n.size()==2){
                System.out.println("The Two digit number -----> "+s2+" "+s1);
            }
        }
    }
}
class three_s extends two_s{
```

```
    String s3;
    void three(ArrayList<Integer> n){
        two(n);
        s3=digit_1.get(n.get(n.size()-3));
        if(n.get(n.size()-3)==1){
            if(n.get(n.size()-2)==1)
                System.out.println("The Three digit number ----> "+s3+" Hundred "+x);
            else
                System.out.println("The Three digit number ----> "+s3+" Hundred "+s2+" "+s1);
        }
        else if(n.size()==3){
            if(n.get(n.size()-2)==1)
                System.out.println("The Three digit number ----> "+s3+" Hundred and "+x);
            else
                System.out.println("The Three digit number ----> "+s3+" Hundred and "+s2+" "+s1);
        }
    }
}
class Helper{
    Helper(ArrayList<Integer> n){
        int s=n.size();
        System.out.println(s);
        three_s number=new three_s();
        if(s==0){
            System.out.println("Zero");
        }
        else if(s==1){
            number.one(n);
        }
        else if(s==2){
            number.two(n);
        }
        else if(s==3){
            number.three(n);
        }
    }
}
class numconvertor{
    public static void main(String[] args){
        Scanner input=new Scanner(System.in);
        System.out.print("Enter a 3 digit number from 0 to 999:");
        int num=input.nextInt();
        while(num>999 || num<0){
            System.out.print("Enter a VALID 3 digit number from 0 to 999:");
            num=input.nextInt();
        }
        ArrayList<Integer> n=new ArrayList<>();
        int a;
        while(num!=0){
            a=num%10;
            n.add(0,a);
            num=num/10;
        }
        System.out.println(n);
        Helper z=new Helper(n);
    }
```

}

```
PS C:\Users\DELL\OneDrive\Desktop\MIT\CODES\FOR GIT HUB\JAVA_BASICS\WEEKLY_LAB_EXERCISE\WEEK 2> java numconvertor.java
Enter a 3 digit number from 0 to 999:998
[9, 9, 8]
3
The Three digit number ----> Nine Hundred and Ninenty Eight
PS C:\Users\DELL\OneDrive\Desktop\MIT\CODES\FOR GIT HUB\JAVA_BASICS\WEEKLY_LAB_EXERCISE\WEEK 2>
```

Exercise 9: Casino Game Write a Java program to simulate a simple Casino game where the player starts with 1000 credit points. Each roll costs 100 credits (the bet amount). For each roll, If the sum of the two dice is 7 or 11, the player wins and gains 100 credits or If the sum of the dice is 2, 3, or 12, the player loses 100 credits or For any other sum (4, 5, 6, 8, 9, or 10) there is no change in credits. The game continues until the player either goes bankrupt (reaches 0 credits) or reaches the target win amount of 2000 credits. Output: Current Credits: 1000 Rolling the dice... Dice sum: 7 You win 100 credits! New Credits: 1100 Current Credits: 1100 Rolling the dice... Dice sum: 4 Oops! No change in credits. New Credits: 1100 … Game Over! Final Credit:----[0 or 2000]

CODE:

```
import java.util.*;
class casino{
   public static void main(String[] args){
      int credits=1000;
      Random r=new Random();
      System.out.println("Rolling the dice.....");
      int a=1+r.nextInt(6);
      int b=1+r.nextInt(6);
      System.out.println(a+" "+b+"CREDITS:"+credits);
      int sum=a+b;
      while(true){
         //System.out.println("Hello");
         if(credits==0||credits>=2000){
            if(credits==0){
               System.out.println("You went bankrupt!");
            }
            else{
               System.out.println("You won!");
            }
            break;
         }
         if(sum==7 || sum==11){
            credits+=100;
         }
         else if(sum==2||sum==3||sum==12){
            credits-=100;
         }
         a=1+r.nextInt(6);
         b=1+r.nextInt(6);
         sum=a+b;
         System.out.println(a+" "+b+"CREDITS:"+credits);

      }
   }

}
```

```
PS C:\Users\2022503003\JAVA\week-2> java casino
Rolling the dice..........
6 5CREDITS:1000
3 6CREDITS:1100
5 1CREDITS:1100
3 2CREDITS:1100
3 1CREDITS:1100
3 3CREDITS:1100
3 4CREDITS:1100
4 1CREDITS:1200
1 6CREDITS:1200
5 1CREDITS:1300
5 1CREDITS:1300
1 3CREDITS:1300
6 4CREDITS:1300
3 6CREDITS:1300
2 1CREDITS:1300
5 6CREDITS:1200
5 5CREDITS:1300
3 4CREDITS:1300
1 1CREDITS:1400
6 2CREDITS:1300
5 1CREDITS:1300
1 3CREDITS:1300
5 3CREDITS:1300
1 4CREDITS:1300
3 5CREDITS:1300
6 1CREDITS:1300
5 5CREDITS:1400
3 4CREDITS:1400
6 5CREDITS:1500
4 5CREDITS:1600
2 2CREDITS:1600
5 3CREDITS:1600
6 3CREDITS:1600
4 2CREDITS:1600
3 5CREDITS:1600
5 3CREDITS:1600
4 6CREDITS:1600
6 2CREDITS:1600
2 6CREDITS:1600
6 5CREDITS:1600
4 6CREDITS:1700
6 4CREDITS:1700
```

```
6 1CREDITS:1700
5 3CREDITS:1800
4 6CREDITS:1800
2 3CREDITS:1800
2 3CREDITS:1800
1 6CREDITS:1800
6 6CREDITS:1900
4 6CREDITS:1800
4 3CREDITS:1800
2 5CREDITS:1900
3 2CREDITS:2000
You won!
PS C:\Users\2022503003\JAVA\week-2> javac casino.java
PS C:\Users\2022503003\JAVA\week-2>
```