INSTITUTE OF SOFTWARE ENGINEERING

GRADUATE DIPLOMA IN SOFTWARE ENGINEERING

ASSIGNMENT NAME
Programming fundamentals
ASSIGNMENT NO
06

NUMBER OF QUESTIONS: 26

NUMBER OF COMPLETED QUESTIONS: 26

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BATCH NO: 61

Programming Fundamental
Assignment 06

01. Write is the correct method declaration? Give reason for illegal declaration.
   a. public static void myMethod() { } ;
   b. public static void main() { }
   c. public void static subMethod( );
   d. public static void () { }
   e. public static void_();
   f. public static void _(){}
   g. public static void myMethod(int x;){ }
   h. public static void myMethod(x) { }
   i. public static void myNewMethod(100) { }
   j. public static void m(int a){return 0;}
   k. public static void m1(){return;}
   l. public static int me(int a){return 0;}

Legal - A/B/K/L
Illegal
C - The type of the method should be in front of the method name
D - A method must have an identifier
E - The method must have a return type,Without a space '_' can not be taken as one type because it is left with a void
F - The method name '-' cannot be used alone
G -
H - The parameter type is not included.
I - You cannot know a value without creating a variable in the parameter list.
J - A value cannot be returned with a return from a void

02. Mark legal and illegal lines. Write most suitable reason for each illegal line.

```
class Example{
    public static String printName(String name){
        return name;
    }
    public static void main(String args[]){
        printName(); //Line 1
        printName("CMJD"); //Line 2
        Example.printName("IJSE"); //Line 3
        MyClass.printName("IJSE"); //Line 4
        MyClass.printName(); //Line 5
        String name1 =
```

```java
        MyClass.printName("CMJD");//Line 6
        String name2 = Example.printName(" ");//Line 7 String name3 =
        printName(); //Line 8
    }
}
class MyClass{
    public static void printName(String name){
        System.out.println("My Name is : " + name); }
    public static String printName(){
        return "Java";
    }
}
```

Line 1 - Illegal, It is illegal because a parameter is not included.
Line 2 - Legal
Line 3 - Legal
Line 4 - Legal
Line 5 - Legal
Line 6 - Illegal, Cannot send parameter to method without requesting parameter
Line 7 - Legal
Line 8 - Illegal, It is illegal because a parameter is not included.

03. Write a Java method to input marks for 10 subjects and find the total and average.

```java
import java.util.Scanner;
class Example{
    public static void main(String[] args) {
        Scanner in=new Scanner(System.in);
        int i=0,t=0;
        while(i<10){
            System.out.print("Input marks :");
            int marks=in.nextInt();
            t=totalValue(t,marks);
            i++;
        }
        System.out.println(t);
        double avg=(double)t/10;
        System.out.println(avg);
    }
    public static int totalValue(int total,int num){
        total=total+num;
        return total;
    }
}
```

04. Write a Java method to input 3 numbers and find the max of them.

```java
import java.util.Scanner;
class Example{
    public static void main(String[] args) {
        Scanner in=new Scanner(System.in);
        int i=0,max=0;
        while(i<3){
            System.out.print("Input numbers "+(i+1)+" : ");
            int num=in.nextInt();
            max=maxValue(max,num);
            i++;
        }
        System.out.println(max);
    }
    public static int maxValue(int max,int num){
        if(max<num)
            max=num;
        return max;
    }
}
```

05. Write a Java method to find & print the area of a circle when the user inputs the radius.

```java
import java.util.Scanner;
class Example {
    public static void main(String[] args) {
        Scanner in = new Scanner(System.in);
        System.out.print("Input radius : ");
        int rad = in.nextInt();
        double a = area(rad);
        System.out.println(a);
    }
    public static double area(int rad){
        double a = (double)rad*rad*22/7;
        return a;
    }
}
```

06. Write a Java method to find out the sum of digits of a number input by the user.

```java
import java.util.Scanner;
class Example {
    public static void main(String[] args) {
        Scanner in = new Scanner(System.in);
        System.out.print("Enter an Number : ");
```

```java
                int n = in.nextInt();
                int t=sum(n);
                System.out.println(t);

        }
        public static int sum(int n){
                int tn=n,t=0;
                while(tn!=0){
                        t=t+tn%10;
                        tn/=10;

                }
                return t;
                }
        }
```

07. Define a method that takes an integer value and returns the number with its digits reversed.

For example, given the number 7631, the function should return 1367.

```java
                import java.util.Scanner;
                class Example {
                    public static void main(String[] args) {
                      Scanner in = new Scanner(System.in);
                        System.out.print("Enter Number : ");
                        int n = in.nextInt();
                        int r=reversNumber(n);
                        System.out.println(r);

                    }
                    public static int reversNumber(int n){
                                int r=0;
                                while(n!=0){
                                        r=r*10+n%10;
                                        n/=10;

                                }
                                return r;
                    }
                }
```

08. Write a method to check a number is Armstrong or not.

(A number is Armstrong if the sum of cubes of individual digits of a number is equal to the number itself. For example, 371 is an Armstrong number as $3^3 + 7^3 + 1^3 = 371$. Some other Armstrong numbers are: 0, 1, 153, 370, 407.)

```
import java.util.Scanner;
class Example {
   public static void main(String[] args) {
      Scanner in = new Scanner(System.in);
      System.out.print("Input Number : ");
      int n = in.nextInt();
      int c=calculation(n);
      if(c==n){
          System.out.println("Armstrong");
      }else{
         System.out.println("not a Armstrong");
      }
   }
   public static int calculation(int n){
        int t=0;
        while(n!=0){
                int d=n%10;
                t+=d*d*d;
                n/=10;
        }
        return t;
   }
}
```

09. Write a Java method to find the smallest positive number that is evenly divisible by all of the numbers from 1 to 20.

2520 is the smallest number that can be divided by each of the numbers from 1 to 10 without any remainder.

```
class Example{
   public static void main(String[] args){
        int x=0;
        boolean b=true;
   while(b==true){
                x++;
                b=divisibleByAllOfTheNumbers(x);
                }
                System.out.println(x);
      }
      public static boolean divisibleByAllOfTheNumbers(int x){
           if (x % 20 == 0 && x % 19 == 0 && x % 18 == 0
              && x % 17 == 0 && x % 16 == 0 && x % 14 == 0
```

```
                && x % 13 == 0&& x % 11 == 0){
                    return false;
            }
            return true;
            }
    }
```

10. Write a Java method to get a Year from user input and find it is a leap year or
    not.

```
    import java.util.Scanner;
    class Example{
        public static void main(String[] args) {
            Scanner in=new Scanner(System.in);
            System.out.print("Input Year : ");
            int year=in.nextInt();
            leap(year);

            }
        public static void leap(int year){
            if (year % 4 == 0) {
                if (year % 100 == 0) {
                    if (year % 400 == 0){
                            System.out.println("leap year");
                    }else{
                    System.out.println("not a leap year");
                    }
                }else{
                    System.out.println("leap year");
                }
            }else{
                System.out.println("not a leap year");
            }

            }
    }
```

11. Write a Java method to print Fibonacci series up to a given number.
    Fibonacci series is a series of natural numbers where the next number is
    equivalent to the
        sum of the previous two number e.g. fn = fn-1 + fn-2. First two numbers
        of Fibonacci series is always 1, 1.

```
    import java.util.*;
    class Example{
        public static void main(String args[]){
            Scanner in = new Scanner(System.in);
```

```java
                    System.out.print("Enter Number : ");
                    int x=in.nextInt();
                    System.out.print("1,1,");
                    getFibonacci(x);
                    System.out.print("\b ");
        }
    public static int getFibonacci(int x){
            int f=1,s=1;
            int n=f+s;
            while(n<=x){
                    System.out.print(n+",");
                    f=s;
                    s=n;
                    n=f+s;
            }
            return n;
    }
}
```

12. Mark legal and illegal lines. Write most suitable reason for each illegal lines..

```java
class Example{
    public static void myMethod(){
                System.out.println("My Method()…");
    }
    public static void main(String args[]){
        int myMethod; //Line 1
        myMethod; //Line 2
        myMethod(); //Line 3
        myMethod(){ } //Line 4
        myMethod(){ }; //Line 5
        Example.myMethod(); //Line 6
        System.out.println("myMethod()");//Line 7
    System.out.println(myMethod()); //Line 8 }
}
```

- LINE 2 - It is a compile error because brackets are not included.
- LINE 4 - It is a compile error because the semicolon is not taken, And the curly brackets are not needed.
- LINE 5 - It is a compile error because of the curly brackets.

13. Which line will occur a compile error and give the acceptable reason for the error?

```java
import java.util.*;
class Example{
    public static void main(String args[]){
        Random r = new Random();
        getNumbers(); //Line 1
        int x = getNumbers(10); //Line 2
        getTotal(100, 10.0); //Line 3
        int total = getTotal(10.0,100); //Line 4
    }
    public static int getNumbers(){
        Random r = new Random();//Line 5
        int x = r.nextInt(10); //Line 6
        int y = r.nextInt(5); //Line 7
        return x,y; //Line 8
    }
    public static int getNumbers(int x){
        x = r.nextInt(x); //Line 9
        return x; //Line 10
    }
    public static int getTotal(int x, double d){
        return x+d; //Line 11
    }
     public static double getTotal(double x, int d){  return x+d; //Line
                                      12
    }
}
```

- Line 8 :- You cannot return two values at once

14. Write a Java method to check if a number is a Palindrome?

```java
import java.util.*;
class Example{
    public static void main(String args[]){
        Scanner in = new Scanner(System.in);
        System.out.print("Input  Number : ");
        int n=in.nextInt();
        int r=revers(n);
        System.out.println(r);
    }

    public static int revers(int n){
        int r=0;
```

```
                        while(n!=0){
                                int d=n%10;
                                r=r*10+d;
                                n/=10;
                        }
                        return r;
                }

        }
```

15. Write a method to convert a decimal number into a binary number,
    printing the binary number.

```
import java.util.*;
class Example{
        public static void main(String args[]){
                Scanner in = new Scanner(System.in);
                System.out.print("Input  Number : ");
                int n=in.nextInt();
                int r=revers(n);
                System.out.println(r);
        }

        public static int revers(int n){
                int r=0;
                while(n!=0){
                        int d=n%10;
                        r=r*10+d;
                        n/=10;
                }
                return r;
        }

}
```

16. Which of the following code can be inserted at line 1 and still code will
    compile?
```
class Example{
    public static void myMethod(int x){
            System.out.println("myMethod(int)");
    }
    public static void main(String args[]){
       //Insert code here //Line 1
```

myMethod(y); //Line 2
        }
    }
    A. byte y=100;   B. short y=122;
    C. int y=100;   D. long y=3300;
    E. float y=1.3f;   F. double y=12.2323;
    G. boolean y=true;   H. char y='A';

- A
- B
- C
- H

17. What is the output of following program?

```
class Example{
    public static void printNumber(int i){
        System.out.print(i+" ");
    }
    public static void main(String as[]){
        int i=1,j=2,k=3;
        printNumber(i++);
        printNumber(++j);
        k=i++ + j++;
        printNumber(k++);
        System.out.print(i+" "+j+" "+k);
    }
}
```

    A. prints 2 4 5 4 6 6   B. prints 2 4 6 4 5 9
    C. prints 1 3 5 3 4 6   D. prints 1 3 5 7 5 9
    E. Compile Error   F. None of the above

- C

18. Given Code:
```
class Demo{
    public static int m(int i) {
        System.out.print(i + ", ");
        return i;
    }
```

```
public static void main(String s[]) {
int i=0;
    int j = m(++i) + m(++i) * m(++i) %m(++i) +
m(++i);  System.out.print( j % 5);
}
}
```

What is the result of attempting to compile and run the program?
A. Prints: 1,2,3,4,5,1   B. Prints: 1,2,3,4,5,2
C. Prints: 1,2,3,4,5,3   D. Prints: 1,2,3,4,5,4
E. Prints: 1,2,3,4,5,5   F. Compiler error

- C

19. Given Code:
```
class M {
   public static int m(int i) {
      System.out.print(i + ", ");
      return i;
    }
   public static void main(String s[]) {
      m(m(1) + m(2) % m(3) * m(4));
  }
}
```
What is the result of attempting to compile and run the program?
A. Prints: 1, 2, 3, 4, 0,   B. Prints: 1, 2, 3, 4, 12,
C. Prints: 1, 2, 3, 4, 3,   D. Prints: 2, 3, 4, 1, 9,
E. Prints: 1, 2, 3, 4, 9,   F. Prints: 2, 3, 4, 1, 3,

- E

20. Create a method called "isPass()" to complete the following program.

```
import java.util.*;
class Example{
  //---------------------------------------------------
  //Insert codes for the method called in the main  method
  //---------------------------------------------------
  public static void main(String args[]){
     Scanner input=new Scanner(System.in);
     System.out.print("Input average marks : ");
```

```
        double avg=input.nextDouble();
        System.out.println(isPass(avg) ? "Pass":"Fail"); }
    }
```

```
import java.util.*;
class Example{
        public static boolean isPass(double avg){
                if(45<avg)
                        return true;
                else
                        return false;
        }
        public static void main(String args[]){
                Scanner input=new Scanner(System.in);
                System.out.print("Input average marks : ");
                double avg=input.nextDouble();
                System.out.println(isPass(avg) ? "Pass":"Fail");
        }
}
```

21. Create a method called "abs ()" to Complete the following program.

```
import java.util.*;
class Example{
    //-------------------------------------------------
    //Insert code for the method declaraion
    //-------------------------------------------------
    public static void main(String args[]){
       Random r=new Random();
       for(int i=0; i<10; i++){


            int rand=r.nextInt();
            System.out.println("Absolute value of  "+rand+" :
    "+abs(rand));
        }
     }
   }
```

```
import java.util.*;
class Example{
        public static int abs(int num){
                if(num<0)
                        return -num;
```

```
                                    return num;
                    }
                    public static void main(String args[]){
                            Random r=new Random();
                            for(int i=0; i<10; i++){
                            int rand=r.nextInt();
                            System.out.println("Absolute value of "+rand+" :
    "+abs(rand));
                            }
                    }
            }
```

22. Create a method called "isEven ()" to complete the following program.

```
    import java.util.*;
    class Example{
       //Insert Code here

       public static void main(String args[]){
          Random r=new Random();
          for (int i = 0; i < 10; i++){
             int rand=r.nextInt(100);
             System.out.println(isEven(rand) ? rand+" is an  even number" :
    rand+" is an odd number ");
          }
       }
    }
```

```
            import java.util.*;
            class Example{
                    public static boolean isEven(int rand){
                            if(rand%2==0){
                                    return true;
                            }else {
                                    return false;
                            }
                    }
                    public static void main(String args[]){
                            Random r=new Random();
                            for (int i = 0; i < 10; i++){
                            int rand=r.nextInt(100);
                            System.out.println(isEven(rand) ? rand+" is an even
    number":rand+" is an odd number ");
                            }
                    }
            }
```

23. Briefly explain outputs for the following program.

```java
import java.util.*;
class Example{
   public static int increment(int x){
      x++;
      System.out.println("x : "+x);
      return x;
   }
//------------------------------------------------
   public static void main(String args[]){
      int x=100;
      System.out.println("x : "+x);
      increment(x);
      System.out.println("x : "+x);
      x=increment(x);
      System.out.println("x : "+x);
   }
}
```

            x : 100
            x : 101
            x : 100
            x : 101
            x : 101

24. Which of the following can be inserted to line 10 in order to be a legal
   code fragment

```java
class Example{
   public static boolean isPass(double avg){
        //Insert code here //Line 10
   }
}
```

A. return;
B. return true;
C. return avg>=50;
D. if(avg>=50){return true;}else{return false;}
E. if(avg>=50){return true;}

F. return avg>=50 ? true:false;

G. if(avg>=50){return true;} return false;

- Compile but Run time error B/C/D/F/G

25. Which of the following method declarations are legal?

A. public static void printTotal(int a, int b){
   int a,b,c;
   }

B. public static void printTotal(int a, b){
   //body
   }

C. public static void myMethod(int x){
   System.out.println("myMethod : "+x);
  return x;
   }

D. public static void myMethod(int x){
   System.out.println("myMethod : "+x);
  return;
   }

E. public static void myMethod(int x){
   System.out.println("myMethod : "+x);
  return;
   System.out.println("Returned..");
   }

F. public static int myMethod(int x){
   System.out.println("myMethod : "+x);
  }

G. public static int myMethod(int x){
   System.out.println("myMethod : "+x);
   return x;
  }

H. public static int myMethod(int x){
   System.out.println("myMethod : "+x);
   return x;
   System.out.println("Returned..");
  }

- D , G

26. Write all the methods to get the correct output.

```
class Example{
        // method 1 comes here
        // method 2 comes here
        // method 3 comes here
    public static void main(String args[]){
        System.out.println(toBinaryString(100)); //1100100
        System.out.println(toOctalString(100)); //144
        System.out.println(toHexString(100)); //64
    }
}

class Example{
        public static String toBinaryString(int n){
                String tn = "";
                while (n > 0){

                        if(n%2==0){
                                tn="0"+tn;
                        }else{
                                tn="1"+tn;
                        }
                        n=n/2;
                }
                return tn;
        }
        public static String toOctalString(int n){
                String tn = "";
                while (n > 0){

                        if(n%8==0){
                                tn="0"+tn;
                        }else if(n%8==1){
                                tn="1"+tn;
                        }else if(n%8==2){
                                tn="2"+tn;
                        }else if(n%8==3){
                                tn="3"+tn;
                        }else if(n%8==4){
                                tn="4"+tn;
                        }else if(n%8==5){
                                tn="5"+tn;
                        }else if(n%8==6){
                                tn="6"+tn;
                        }else{
```

```java
                        tn="7"+tn;
                }
                n=n/8;
        }
        return tn;

}
public static String toHexString(int n){
        String tn = "";
        while (n > 0){

                if(n%16==0){
                        tn="0"+tn;
                }else if(n%16==1){
                        tn="1"+tn;
                }else if(n%16==2){
                        tn="2"+tn;
                }else if(n%16==3){
                        tn="3"+tn;
                }else if(n%16==4){
                        tn="4"+tn;
                }else if(n%16==5){
                        tn="5"+tn;
                }else if(n%16==6){
                        tn="6"+tn;
                }else if(n%16==7){
                        tn="7"+tn;
                }else if(n%16==8){
                        tn="8"+tn;
                }else if(n%16==9){
                        tn="9"+tn;
                }else if(n%16==10){
                        tn="A"+tn;
                }else if(n%16==11){
                        tn="B"+tn;
                }else if(n%16==12){
                        tn="C"+tn;
                }else if(n%16==13){
                        tn="D"+tn;
                }else if(n%16==14){
                        tn="E"+tn;
                }else{
                        tn="F"+tn;
                }
                n=n/16;
        }
        return tn;
}
public static void main(String args[]){
        System.out.println(toBinaryString(100)); //1100100
        System.out.println(toOctalString(100)); //144
        System.out.println(toHexString(100)); //64
```

```
        }
    }
```