INSTITUTE OF SOFTWARE ENGINEERING

GRADUATE DIPLOMA IN SOFTWARE ENGINEERING

ASSIGNMENT NAME

Programming fundamentals

ASSIGNMENT NO

02

NUMBER OF QUESTIONS: 40

NUMBER OF COMPLETED QUESTIONS: 40

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Programming Fundamental
Assignment 02

1. What is the difference between print() and println()? Explain your answer with suitable examples.

	Print()	Println()
Implementation	Print method is implemented as it prints the text on the console and the cursor remains at the end of the text at the console.	On the other hand, prinntln method is implemented as prints the text on the console and the cursor remains at the start of the next line at the console and the next printing takes place from next line.
Nature	The prints method simply print text on the console and does not add any new line.	While println adds new line after print text on console.
Arguments	Print method works only with input parameter passed otherwise in case no argument is passed it throws syntax exception.	Println method works both with and without parameter and do not throw any type of exception.

Example of print() vs println()

Print()

Input….>

```
class Example{
public static void main(String args[]){
System.out.print("Hello");
System.out.print("Java");
}
}
```

Output….>

HelloJava

Println()

Input….>

```
class Example{
public static void main(String Args[]){
System.out.println(“Hello”);
System.out.println(“Java”);
}
```



```
}
```

Output….>

Hello

Java

2. Write a Java program to print both name and address in several lines.

```
class Example{
public static void main(String args[]){
System.out.println(“Maheeshi Naveendana”);
System.out.println(“C/48”);
System.out.println(“Ihala Ambuwangala”);
System.out.println(“Imbulgasdeniya”);
}
}
```

3. Briefly explain the types of Java literals. Explain your answer with suitable examples.

String literals

- Any sequence of characters within double quotes is taken as String literals.
  Ex:- “ABCD” , “200” , “My name” , “Z”.....

Character literals

- We can specify literal to a character data type as a single character within the single quote.
  Ex:- ‘A’ , ‘5’ , ‘z’ ,……

Integer literals

- We can specify integer literals as natural numbers or whole numbers.
  Ex:- 200 , -158 …….

Floating-point literals

- For Floating-point data types, we can specify literals in only decimal form, and we can't specify in octal and Hexadecimal forms.
  Ex:- 0.002 , 1.234, 1.2E8 …….

Boolean literals

- Only two values are allowed for Boolean literals, i.e., true and false.

  Ex:- True , False ……..

4. Write a Java program to obtain the following result.

```
*
* *
* * *
* * * *
* * * * *
```

```
class Example{
public static void main(String args[]){
System.out.println("*");
System.out.println("*"+" "+"*");
System.out.println("*"+ "+"*"+" "+"*");
System.out.println("*"+" "+"*"+" "+"*"+" "+"*"); System.out.println("*"+"
"+"*"+" "+"*"+" "+"*"+" "+"*"); }
}
```

5. Write a Java program to obtain the following result.

```
*
**
***
****
*****
```

```
class Example{
public static void main(String args[]){
System.out.println("*");
System.out.println("*"+"*");
System.out.println("*"+"*"+"*");
System.out.println("*"+"*"+"*"+"*");
System.out.println("*"+"*"+"*"+"*"+"*"); }
}
```

6. Write a Java program to obtain the following result.

```
*
```

**

***

**

*

```
class Example{
public static void main(String args[]){
System.out.println(" "+" "+" "+" "+"*");
```



```
System.out.println(" "+" "+" "+"*"+" "+" "+" "+"*");
System.out.println(" "+"*"+" "+" "+" "+"*"+" "+" "+" "+"*");  System.out.println("
"+" "+" "+"*"+" "+" "+" "+"*");
System.out.println(" "+" "+" "+" "+" "+"*");
}
}
```

7. Write a Java program to accomplish the following tasks in one.

a. Declare an integer variable named as "i".
b. Initialize the variable as 100.
c. Declare another variable "age" and initialize it dynamically, as 20. d. Print the value of age ("The age is ….").

```
class Example{
public static void main(String args[]){
int i = 100;
int age;
age = 20;
System.out.println("The age is: "+age);
}
}
```

8.Write a Java program to print the total of two integer numbers input by the keyboard.

```
import java.util.Scanner;
class Example{
public static void main(String args[]){
Scanner input=new Scanner(System.in);
int a,b,c;
System.out.print("Input number 1 : ");
a=input.nextInt();
System.out.print("Input number 2 : ");
b=input.nextInt();
c=a+b;
System.out.println(a+" + "+b+" = "+c);
}
```

```
}
```

9. Write a Java program create 2 variables as integers, named x, y and assign values in the same statement

a. Print the values as x, y format (eg: if x is 10 and y is 20 output should be 10 20)

b. Print the values in y, x format.

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



```
class Example{
public static void main(String args[]){
Scanner input=new Scanner(System.in);
System.out.print("Input number 1 : ");
int x=input.nextInt();
System.out.print("Input number 2 : ");
int y=input.nextInt();
System.out.println(x+" "+y);
System.out.println(x+" "+y);
}
}
```

10. Write a Java program using the help of the “Scanner”,

a. Input two values and store them in two variables.

b. Print the values as they assign to the variable and finally print them as “Values are …”

```
import java.util.Scanner;
class Example{
public ststic void main(String args[]){
Scanner input=new Scanner(System .in);
int x,y;
System.out.print(“Input number for X:”);
x=input.nextlnt();
System.out.print(“Input number for Y:”);
y=input.nextlnt();
system.out.println(“Values are “+x+” , “+y);
}
}
```

11. Write one Java program to accomplish the given task.

a. Declare 4 variables using only ONE statement. (variable names: Computing, Maths, Science,
English)

b. Initialize the 4 variables. (Use a value from 1 to 100)

c. Declare another Integer variable as total, and sum up the 4 variables and add to the total.

d. Print the total ("The total is …")

e. Write a print statement, which prints the total by not using the total variable or any other variable except the given 4 variables.

f. Print the four variables keeping space between them. (20 10 30 40) g. Declare a variable "average" as double and initialize it as 0.0. h. Find the average of the 4 variables and store them in the variable "average".

i. Print the average as ("The Average is ….").

```
import java.util.Scanner;
class Example{
public static void main(String args[]){
int Computing,Maths,Science,English;
Computing = 80;
Maths = 90;
Science = 60;
English = 30;
int Total;
Total= Computing+Maths+Science+English;
System.out.println("The Total is : "+Total);
System.out.print("The Total is : ");
System.out.println(Computing+Maths+Science+English);
System.out.println(Computing+" "+Maths+" "+Science+" "+English);  double average;
average=Total/4;
System.out.println("The Average is : "+average);
}
}
```

12. Write a Java program to convert inches to millimetres. The conversion formula is "1mm=inch x 25.4"

```
import java.util.Scanner;
class Example{
        public static void main(String args[]){
                Scanner input=new Scanner(System.in);
                double inch,mm;
                System.out.print("Input Inch : ");
                inch=input.nextDouble();//inch input
                mm=inch*25.4;
                System.out.println(inch+" inch"+" = "+mm+" mm");
        }
}
```

13. Write a Java program to convert ounces to grams. The conversion formula is

“gram =ounce x 28.3495”.

```
import java.util.Scanner;
class Example{
public static void main(String[] args){
Scanner input=new Scanner(System.in);
double x,y;
System.out.print("Input Inch : ");
x=input.nextDouble();
y=x*28.3495;
System.out.println(x+" oz"+" = "+y+" g");
}
```



```
}
```

14. Write a Java program to accomplish the following task.

a. Input your age.

b. Store it in an integer variable named “age”

c. Find your age after 3years (No additional variables can be used). d. Print the new age as “New age : “

```
import java.util.Scanner;
class Example{
public static void main(String[] args){
Scanner input=new Scanner(System.in);
int age;
System.out.print("Input age : ");
age=input.nextInt();
age=age+3;
System.out.println("New age is : "+age);
}
}
```

15. Write a Java program to input marks for 10 subjects find the total and average. The result must be as follows.

Marks

[34,45,62,34,23,89,56,45,67,56]

Total :511

Average :51.1

```
class Example{
        public static void main(String[] args){
                int a=34,b=45,c=62,d=34,e=23,f=89,g=56,h=45,i=67,j=56,total;
                total=a+b+c+d+e+f+g+h+i+j;
                double average;
                average=total/10.0;
                System.out.println("Total is : "+total);
```

```
                System.out.println("Average is : "+average);
            }
    }
```

16. Which of the followings can be legally inserted at line 12? Explain your answer.

```
class Example{
public static void main(String args[]){
int x;
//Insert code here //Line 12
System.out.println(x);
```



```
}
}
```

A. int y; B. int x;
C. y=100; D. x=200;
E. Insert nothing

D. x=200 - Since the value of x is printed, x must be given a value.

17. Which of the followings can be legally inserted at line 12? Explain your answer.

```
class Example{
 public static void main(String args[]){
 //Insert code //Line 12
 System.out.println(x);
 System.out.println(y);
 }
 }
```

A. int x,y; B. int x=10,y;
C. int x=10,y=20; D. int x=y=10;
E. int x,y=20; F. int x=10,y=20,z=30

C. int x=10, y=20; - Since the value of x and y is printed, we need to create variables for x and y and assign values to them.

18. What is the result of attempting to compile and run the program?

```
class Example{
 public static void main(String args[]){
 System.out.println("CD");
 System.out.print("\nEF\n");
```

```
System.out.print("G\nH");
}
}
```

A

BCD

EF

G

H

19. What will be the output when you compile and run the following program?

```
class Example{
pubic static void main(String args[]){
System.out.println(10+20+30);
System.out.println("10+20+30");
System.out.println("10+20"+30);
System.out.println("10"+"20"+"30");
System.out.println("10"+20+30);
System.out.println(10+20+"30");
System.out.println(10+"20"+30);
}
}
```

```
Example.java:2: error: <identifier> expected
pubic static void main(String args[]){
^
1 error
```

After correction :

```
class Example{
public static void main(String args[]){
System.out.println(10+20+30);
System.out.println(“10+20+30”);
System.outprintln(“10+20”+30);
System.out.println(“10”+”20”+”30”);
System.out.println(“10”+20+30);
System.out.println(10+20+”30”);
System.out.println(10+”20”+30);
}
```

```
}
```

Output :

```
60
10+20+30
10+2030
102030
102030
3030
102030
```

20. Which of the following lines are valid statements? Explain your answers.

```
class Example{
 public static void main(String args[]){
```



```
 System.out.println(0B11100100); //Line 1
 System.out.println(0b11100100); //Line 2
 System.out.println(0B11100200); //Line 3
 System.out.println(0144); //Line 4
 System.out.println(0148); //Line 5
 System.out.println(0x64); //Line 6
 System.out.println(0xabc); //Line 7
 System.out.println(0xabcg); //Line 8
 System.out.println(0X); //Line 9
 System.out.println(0Xffffffff); //Line 10
 }
 }
```

- Line 1 : Valid - Since the beginning is 0B, it is binary number.
- Line 2 : Valid - Since the beginning is 0b, it is binary number.
- Line 3 : Invalid - Since the beginning is 0B, it is binary number but binary has only 0 and 1 values.
- Line 4 : Valid - Since the beginning is 0, it is octal number.
- Line 5 : Invalid - Since the beginning is 0, it is octal number and the octal contains only the numbers 0 to 7.
- Line 6 : Valid - Since the beginning is 0x, it is hexadecimal number.
- Line 7 : Valid - Since the beginning is 0x, it is hexadecimal number.
- Line 8 : Invalid - Since the beginning is 0x, it is hexadecimal number but there is no such thing as g in hexadecimal.
- Line 9 : Invalid - Since the beginning is 0x, it is hexadecimal number but nothing after that. •

Line 10 : Valid - Since the beginning is 0x, it is hexadecimal number. (f – 15)

21. Write a Java statement to accomplish each of the following tasks:

a. Declare variables sum and x to be of type int.

b. Assign 1 to variable x.
c. Assign 0 to variable sum.
d. Add variable x to variable sum, and assign the result to variable sum. e. Print "The sum is: ", followed by the value of the variable sum.

- a.int sum,x;
- b.x=1;
- c.sum=0;
- d.sum=x+sum;
- e.System.out.println(“The sum is : ”+sum);

```
class Example{
        public static void main(String[] args){
int sum,x;
x=1;
```



```
sum=0;
sum=x+sum;
System.out.println("The sum is : "+sum);
}
}
```

22. Write Java statements to get following output (Only one sout statement can be used)
a. Java is a typed language
b. AB"CB
c. AB\CD
d. C:\Windows\Program
e. AB\"CD
f. AB\\""CD
g. AB\nCD
h. AB\tCD
i. AB\bCD

```
a. System.out.println(“Java is a typed language”);
b. System.out.println(“AB”+””+”CB”);
c. System.out.println(“AB\\CB”);
d. System.out.println(“C:\\Windows\\program”);
e. System.out.println(“AB\\”+””+”CD”);
f. System.out.println(“AB\\\\”+””+””+”CD”);
g. System.out.println(“AB\\”+’n’+”CD”);
h. System.out.println(“AB\\”+’t’+”CD”);
i. System.out,println(“AB\\”+’b’+”CD”);
```

23. Which of the followings can be legally inserted at line 12? Explain your answer.

```
class Example{
 public static void main(String args[]){
 int x;
 //Line 12
 System.out.println(x);
 }
 }
```

A. x+1; B. x=100;
C. int y=100 D. int x=200;
E. Insert nothing.

B. x=100; Since the value of x is printed, x must be given a value.

24. Write a Java program to get the following output using a single "System.out.println()"

ABC
XYZ
PQR

```
class Example{
        public static void main(String args[]){
                System.out.println("ABC\nXYZ\nPQR");
}
}
```

25. What is the result of attempting to compile and run the program?

```
class Example{
 public static void main(String args[]){
 int x=10,y=20,z=30;
 System.out.println(x);
 System.out.println(y);
 System.out.println(z);
 int y=200;
 System.out.println(y);
 }
 }
```

Error :-
variable y is already defined in method main(String[]) int y=200;
^

After correction :

```
class Example{
public static void main(String args[]){
                    int x=10,y=20,z=30;
                    System.out.println(x);
                    System.out.println(y);
                    System.out.println(z);
                    y=200;
                    System.out.println(y);
}
}
```

Output :-

```
10
20
```



```
30
200
```

26. Write a Java program to get the following output.
    |"/"\"/"\"|

```
class Example{
public static void main(String args[]){
System.out.println("|"+'"'+"/"+'"'+"\\"+'"'+"/"+'"'+"\\"+'"'+"|");
}
}
```

27. Write a Java program to get the following output.
    "+"\"+/"+"'"+"\n"+"\n"

```
class Example{
public static void main(String args[]){
System.out.println(“”+”+”+””+”\\”+””+”+/”+””+’+’+””+”’”+””+’+’+””+\\n+””+’+’+””+\\n+””)  }
}
```

28. Write a Java program to get the following output using a single “System.out.println()”
    Name : Niroth
    Total : 673
    Average: 67.3
    Grade : B

```
class Example{
public static void main(String args[]){
System.out.println("Name : Niroth \nTotal : 673 \nAverage : 67.3 \nGrade : B");  }
}
```

29. Which of the following lines are valid declarations? Select the three correct answers.
    a. char a = '\u0061';
    b. char 'a' = 'a';
    c. char \u0061 = 'a';
    d. ch\u0061r a = 'a';
    e. ch'a'r a = 'a';

a. char a = ‘\u0061’; , c. char \u0061 = ‘a’; , d. ch\u0061 = ‘a’;

30. What is the result of attempting to compile and run the program?

```
class Example{
 public static void main( String args[] ){
 int x,y,z; //line 1
 x=y=z=10; //line 2
 int a=12,b,c=4; //line 3
 int p=10; //line 4
 int q=p; //line 5
 int i=j=k=10; //line 6
 }
 }
```

    a. Compile error at line 2
    b. Compile error at line 3
    c. Compile error at line 5
    d. Compile error at line 6
    e. None of the above

d. Compile error at line 6

31. Which are valid declarations? (Choose all that apply.)
    a. int $x;
    b. int 123;
    c. int _123;
    d. int #dim;

e. int %percent;
f. int *divide;
g. int sales_ Summer_2005_gross_sales; _

a. int $x; , c. int 123;

32. What is the result of attempting to compile and run the program?

```
class Example{
public static void main(String args[]){
int x,y,z;
System.out.println(x+y+z);
}
}
```

a. prints : nothing
b. prints : undefined value
c. prints null.
d. Runtime error

e. Compile-time error
f. None of the above

e. Compile-time error

33. What is the result of attempting to compile andrun the program?

```
class Example{
public static void main(String args[]){
int x;
System.out.println(x);
}
}
```

a. prints : nothing
b. prints : x
c. prints : 100
d. Runtime error
e. Compile time error

e. Compile time error

34. What will be the result of attempting to compile and run the following program?

```
class Example {
```

```
public static void main(String[] args) {
System.out.println(0x10 + 10 + 010);
}
}
```

Select the one correct answer.

a. The program will not compile. The compiler will complain about the expression " 0x10 + 10 + 010."
b. When run, the program will print 28.
c. When run, the program will print 30.
d. When run, the program will print 34.
e. When run, the program will print 36.
f. When run, the program will print 101010.

d. When run, the program will print 34.

35. Compile time error is generated at which line?

```
class Example{
public static void main(String args[]){
char a = '\c'; // Line 1
char b = '\r'; // Line 2
char c = '\"'; // Line 3
char d = '\b'; // Line 4
char e = '\'; // Line 5
}
}
```

a. Line 1
b. Line 2
c. Line 3
d. Line 4
e. Line 5
f. None of the above

f. None of the above

36. What is the output for the following code fragment and explain your answer?

A. System.out.println(1+2+3);

B. System.out.println("1"+"2"+"3");
C. System.out.println('1'+'2'+'3');
D. System.out.println('1'+" "+'2'+" "+'3');
E. System.out.println('A'+'B'+'C');
F. System.out.println("A"+"B"+"C");
G. System.out.println('A'+100+200);
H. System.out.println('A'+" "+'B'+" "+'C');

A. 6 - All Integers.
B. 123 - All Characters.
C. 150 - ASCII value of digits 1 – 49/ 2 – 50/ 3 – 51. Total is 150.
D. 1 2 3 - Two are in the middle of the string and the other is converted to a string. E. 198 - ASCII value of character A – 65/ B – 66/ C – 67. Total is 198.
F. ABC - All Characters.
G. 365 - A character ASCII value is 65(65+100+200=365).
H. A B C - Two are in the middle of the string and the other is converted to a string.

37. What will be the outputs when you compile and run the following program and explain your answer line by line?

```
class Example{
public static void main(String asrg[]){
char a='a';
System.out.println(a=='\u0061');
System.out.println(\u0061=='\u0061');
System.out.println(\u0061==97); \u0061='\u0041';
System.out.println('A'=='\u0041');
System.out.println(65=='\u0041');
System.out.println(65==a);
System.out.println('\u0041'==a);
}
}
```

- char a='a'; - variable a stores a lowercase a character
- System.out.println(a=='\u0061'); - in UTF lowercase a character is represented as \u0061

- System.out.println(\u0061=='\u0061'); - \u0061 value is unquoted so it's decoded into lowercase a during compilation making it a=='\u0061',

- System.out.println(\u0061==97); - same as above because 97dec = 61hex except here we are not using UTF notation to represent character, instead we use numerical value of char

- \u0061='\u0041'; - a variable assigned value of \u0041 which is uppercase A •

System.out.println('A'=='\u0041'); in UTF lowercase A character is represented as '\u0041'

- System.out.println(65=='\u0041'); - - 65dec = 41hex, here we are comparing two constants, not the a variable

- System.out.println(65==a); - - 65dec = a,

- System.out.println('\u0041'==a); - - a = 41hex

38. Which are valid declarations and explain why?
    a. System.out.println(0B1010);
    b. System.out.println(B1010);
    c. System.out.println(0B01010);
    d. System.out.println(01010);
    e. System.out.println(0x1010);
    f. System.out.println(01012);
    g. System.out.println(0B1012);

System.out.println(0B1010); 10 - Since the beginning is 0B, it is binary number.
System.out.println(0B01010); 10 - Since the beginning is 0B, it is binary number.
System.out.println(01010); 520 - Since the beginning is 0, it is octal number.
System.our.println(0*1010); 4112- Since the beginning is 0x, it is hexadecimal number.
System.out.println(01012); 522 - Since the beginning is 0, it is octal number.

39. Complete the following program?

```
import java.util.*;
class Example{
public static void main(String args[]){
Scanner input=new Scanner(System.in);
System.out.print("Input your age : ");
int age=input.nextInt();
System.out.println("Your current age is : "+age);

//--------------Do not modify before this line----
//your are allowed to insert any code here to
//increment the age by 10
//---------------------Do not modify after this line---
System.out.println("Your age after 10 years is : " +age);   }
}
```

```
import java unit.;
class Example{
 public static void main(String args[]){
 Scanner input=new Scanner(System.in);
 System.out.print(“input your age : “);
 int age=input.nextlnt();
 System.out.println(“Your current age is : “+age);
 age=age+10;
 System.out.println(“Your age after 10 years is : “+age);
```



```
 }
 }
```

40. Complete the following program?

```
import java.util.*;
class Example{
public static void main(String args[]){   Scanner
input=new Scanner(System.in);
System.out.print("Input number 1 : ");   int
num1=input.nextInt();
 System.out.print("Input number 2 : ");  int
num2=input.nextInt();
 System.out.println(num1+" "+num2);   //-----------Do not
modify before this line--------  //Insert Java code(s) here to
swap the two  //variables "num1" and "num2"
 //as an example when you input 10 for  //num1
and 20 for num2, then
 //the first output should be "10 20" and the  //second
```

output "20 10"
//------Do not modify after this line----------
System.out.println(num1+" "+num2); }
}

```
import java.util.Scaner;
class Example{
 public static void main(String args[]){
 Scanner input=new Scanner(System.in);
 System.out.print(“Input number 1 : “);
 int num 1=input.nextlnt();
 System.out.print(“Input number 2 : “);
 int num 1=input.nextlnt();
 System.out.println(num 1+” “+num 2);
 num 2=num 1+num 2;
 num 1=num 2-num 1;
 num 2=num 2-num 1;
 System.out.println(num 1+” “+num 2);
 }
}
```