Institute of Software Engineering

Graduate Diploma in Software Engineering

ITS1010 - Programming Fundamentals – Assignment 03

Answer all the questions and submit your attempt on or before the given date.

1. Describe primitive data types in Java? (types, sizes and data ranges)

2. Which of the following statements are legal? And explain your answer.
   A. byte b1=100; B. byte b2=128;
   C. byte b3=-128; D. byte b4=0;
   E. short s1=100; F. short s2=32768;
   G. short s3=32767; H. short s4=-32768;

3. What are legal statements of followings? Explain your answer.
   A char c1='A'; B. char c2='7';
   C. char c3='AB'; D. boolean b1=true;
   E. boolean b2=False; F. boolean b3=false;
   G. boolean b4=True; H. boolean b5="false";
   I. boolean b6=0;

4. Convert following integer numbers into binary, octal and hexadecimal forms:
   A. 10 B. 16 C. 128
   D. 255 E. 32767 F. 1
   G. 0 H. 26 I. 31

5. Convert following integer numbers into 2's Complement binary form(8bits)
   A. -10 B. -100 C. -64
   D. -1 E. -2 F. -128
   G. 0 H. -127 I. -32

6. Compare and contrast the following with suitable examples:
   a. Conversion and Casting
   b. Narrow Conversion and Narrow Casting
   c. Wider Conversion and Wider Casting

7. Which of the following code fragments are legal?

   A. double d='A';
      long l=(int)d;

   B. char ch='A';
      double d=ch;

   C. byte b='65';
      char ch=b;

   D. double d='A';
      char ch=(short)d;

   E. float f=65;
      int x=(char)f;

8. What will be the output when you compile and run the program? Explain your answers.

```
class Example{
    public static void main(String args[]){
        byte b1=10,b2=20,b3;
        b3=b1+b2;      //Line 1
        b3=b1+1;    //Line 2
        b3=b1*2;    //Line 3
        short s1=10,s2=20,s3;
        s3=s1+s2;   //Line 4
        s3=s1+1;    //Line 5
        s3=s*1;     //Line 6
        int x1=10,x2=20,x3;
        x3=x1+x2;   //Line 7
        x3=b1+b2;      //Line 8
        x3=b1+1;    //Line 9
        x3=b1*2;    //Line 10
        x3=s1+s2;   //Line 11
        x3=s1+1;       //Line 12
        x3=s1*1;    //Line 13
    }
}
```

9. Given :

```
class Example{
    public static void main(String args[]){
        long l;
        //Line 10
        System.out.println(l);
    }
}
```

   Which of the following statements can be legally placed at Line 10 of the above program.
   A. l = 2147483647; B. l = 2147583647;
   C. l = 0xabcd; D. l = 0bcdL;
   E. l = 0101010110L;

10. Given :

```
class Demo {
    public static void main(String args[]) {
        int tot = 971;
        double avg;
        //insert code here //Line 4
        System.out.println("Average : " + avg);
    }
}
```

Which of the following statements can be inserted at "Line 4" to get output as "Average : 97.1"

A. avg = (double) tot/10; B. avg = tot/(double)10;
C. avg = (double)(tot/10) D. avg = tot/10
E. None of above

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

```
class Example{
    public static void main(String asrg[]){
        double d;
        d=5/2+5/2;
        System.out.println(d);
        d=5/2.0+5/2;
        System.out.println(d);
        d=5/2+5.0/2;
        System.out.println(d);
        d=5/2.0+5/2.0;
        System.out.println(d);
    }
}
```

A 4.0 4.0 4 5.0 B. 4.0 4.5 4.5 5.0
C. 4 4.0 4.0 5.0 D. 4.5 4.5 4 5.0
E. 4 4.5 4.5 5

12. Which of the following lines are valid declarations?

A. char a = '\u0061'; B. char 'a' = 'a';
B. char \u0061 = 'a'; D. ch\u0061r a = 'a';
E. ch'a'r a = 'a';

13. Which of the following are legal lines of code?

A. int a = (int)888.8; B. byte x = (byte)1000L;
C. long l = (byte)100; D. byte z = (byte)100L;

14. What is the numerical range of a char?

A. -128 to 127 B. -215 to 215 – 1
C. 0 to 232 D. 0 to 216

15. Which of the following lines can be inserted at the line 12 to get the output "-1"

```
class Example{
    public static void main(String args[]){
        int x;
        byte b;

        //insert code here Line 12
        b=(byte)x;
        System.out.println(b);
    }
}
```

A. x=Short.MAX_VALUE; B. x=Short.MIN_VALUE;
C. x=-1; D. x=Byte.MAX_VALUE;
E. x=Byte.MIN_VALUE; F. x=0;
G. x=Integer.MAX_VALUE;
H. x=Integer.MIN_VALUE;

16. Write the outputs for the following code lines.
Given Code: int a=10, b=7, c=-10, d=-7;

A. System.out.println(a%b);
B. System.out.println(-a%b);
C. System.out.println(a%-b);
D. System.out.println(-a%-b);
E. System.out.println(+a%+b);
F. System.out.println(c%d);
G. System.out.println(-c%d);

17. Which of the following code lines are legal?

```
int x=65;
final int y=65;
final int z;
z=65;
char ch;
ch='A';     //Line 1
ch=65;//Line 2
ch=x;       //Line 3
ch=y;       //line 4
ch=z;       //Line 5
```

A. Line 1 B. Line 2
C. Line 3 D. Line 4
E. Line 5 F. None of the above

18. Which statements are true?
Select the three correct answers.

A. The result of the expression (1 + 2 + "3") would be the string "33".
B. The result of the expression ("1" + 2 + 3) would be the string "15".
C. The result of the expression (4 + 1.0f) would be the float value 5.0f.
D. The result of the expression (10/9) would be the int value 1.
E. The result of the expression ('a' + 1) would be the char value 'b'.

19. Which of the following are legal lines of code?

A. int a = (int)888.8;
B. byte x = (byte)1000L;
C. long l = (byte)100;
D. byte z = (byte)100L;

20. Write the outputs for the following code lines.
Given: int x=10,y=7;

A. System.out.println(x+y);
B. System.out.println(-x);
C. System.out.println(-x-y);
D. System.out.println(-(x-y));
E. System.out.println(+y);
F. System.out.println(+y-x);

21. Write the outputs for the following code lines.

```
int x=-100;
x=+x;
System.out.println(x);
x=-x;
System.out.println(x);
x=-x;
System.out.println(x);
x=x+x;
System.out.println(x);
x=-x-x;
System.out.println(x);
x=x-x;
System.out.println(x);
```

22. Write the outputs for the following code lines.

```
int x=100;
System.out.print(x++);
System.out.println(x++);
x++;
System.out.println(++x);
System.out.println(x++);
```

23. Write the outputs for the following code lines.

```
int x=100,y;
y=x++;
System.out.println(x+" "+y);
y=x++;
System.out.println(x+" "+y);
y=x++;
System.out.println(x+" "+y);
```

24. Write the outputs for the following code lines.

```
int x=100,y;
y=++x;
System.out.println(x+" "+y);
y=++x;
System.out.println(x+" "+y);
y=++x;
System.out.println(x+" "+y);
```

25. Write the outputs for the following code lines.

```
int x=100;
x=x++;
System.out.println(x);
x=x++;
System.out.println(x);
x=x++;
System.out.println(x);
x=++x;
System.out.println(x);
x=++x;
System.out.println(x);
x=++x;
System.out.println(x);
```

26. Write the outputs for the following code lines.
    Given code :int a=10, b=7, c=-10, d=-7;
    A. System.out.println(10%7);
    B. System.out.println(10%5);
    C. System.out.println(10%17);
    D. System.out.println(5.0%1.0);
    E. System.out.println(5.5%1.1);

27. Explain the evaluation of following expressions

```
int a=10,b=20;
int x;
```

    a). x= a + b; b). x= a +- b;
    c). x= ++a + b; d). x= a + b++;
    e). x= ++a + b++; f). x= a++ + b++;
    g). x= ++a + ++ b; h). x= a++ + ++b;

28. What will be the result of attempting to compile and run the following program? Explain your answers.

```
class Example{
   public static void main(String[] args) {
        int x;
        x= 12 - 4 * 2;
        System.out.println("12 - 4 * 2   : "+x);
        x= (12 - 4) * 2;
        System.out.println("(12 - 4) * 2 : "+x);
        x= 12 - (4 * 2);
        System.out.println("12 - (4 * 2) : "+x);
   }
}
```

29. Explain the evaluation of following expressions

```
int x;
```

    a). x= 7 % 10 / 2 * 2; b). x= 7 % (10 / 2) * 2;
    c). x= 7 % 10 / (2 * 2); d). x= 7 % (10 / (2 * 2));
    e). x= 7 % ((10 / 2) * 2);

30. Explain the evaluation of following expressions

```
int a=100;
```

    a). a= a + (a=6); b). a= (a=6) + a;
    c). a= (a=6) + (a=5); d). a= a*3 + a;

31. Explain the evaluation of following expressions

```
int a=10;
int x;
```

    a). x= a++ + a; b). x= a + a++;
    c). x= ++a + a; d). x= a + ++a;
    e). x= ++a + ++a; f). x= a++ + a++;
    g). x= ++a + a++; h). x= a++ + ++a;
    g). x= ++a + a++; h). x= a++ + ++a;

32. Write the outputs for the following code lines.

```
int x,y;
x=y=100;
x=x++ +x++ + x++ ;
System.out.println(x);
y=++y + ++y + ++y;
System.out.println(y);
y=x=100;
System.out.println();
x=x++ + ++y + ++x + y++;
System.out.println(x+" "+y);
```