

King Saud University

College of Computer and Information Sciences
Computer Science Department



Course Code	CSC 111		
Course Title	Introduction to Programming		
Section No.			
Semester	First 421		
Exam	Final Exam		
Date	21/12/2020	Duration: 3 Hours	
Student Name			
Student ID			

Course Learning Outcomes		Relevant question	Full mark	Student mark
CLO 1	a) Apply knowledge of computing and mathematics appropriate to the discipline;	1	25	
CLO2	i) Use current techniques, skills, and tools necessary for computing practice.	2	15	
Feedback/Comments:				

Part I: Put your answers (**multiple choice questions**) in the following table. **(25 Marks)**

Question	Answer
1	
2	
3	
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23	
24	
25	

1) With x = 0, which of the following are legal lines of Java code for changing the value of x to 1?

- A. x++;
- B. x = x + 1;
- C. x += 1;
- D. x =+ 1;

a) A, B & C

b) A & D

c) A, B, C & D

d) B & C

2) what is the output for the following code?

```
public class A
{
    public static void main(String args[])
    {
        int x = 5, y = 6, z=3, a;
        a= ++ y * x / y + y/z;
        System.out.print(a);
    }
}
```

a) 10

b) 11

c) 12

d) 7

3) what is the output for the following code?

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

int a=20, b=10, d=20;
boolean c = a>=10 && b<20 && d>10;
boolean e = a<=10 || b>5;
System.out.println(c&&e);
    }
}
```

a) false

b) true

c) Compiler error

d) None of the above

4) What is the output of the following java snippet code?

```
int a=3, b=8;
boolean c = a>5 && ++b>6;
System.out.println(b);
```

a) 8

b) 9

c) 6

d) Compiler error

5) What is the output of the following java snippet code?

```
int a=5, b=9;
boolean c = a>1 || b++<10;
System.out.println(b);
```

- a) 9 b) 10 c) 8 d) Compiler error

6) What is the output of the following java code?

```
public class testClass {
    public static void main(String[] args) {
        int x=1;
        switch(x) {
            default: System.out.print("true");
            case 1: System.out.print("1");break;
            case 2: System.out.print("2");
        }
    }
}
```

- a) true1  b) 12 c) Compilation error  d) None of the above

7) What is the output of the following java code?

```
public class testClass {
    public static void main(String[] args) {
        int i;
        if(i==0 || i>0)
            System.out.println("Yes");
        if(i!=0) System.out.println("No");
        else System.out.println("Both");
    }
}
```

- a) Yes b) No c) Compilation error d) Both

8) What is the output of the following java code?

```
public class testClass {
    public static void main(String[] args) {
        int i=0,j=9;
        if(i==0 || j/i>1)
            System.out.print("Yes");
        if(i!=0) System.out.print("No");
        else System.out.print("Both");
    }
}
```

- a) YesNo b) No c) Compilation error d) YesBoth

9) What is the output of the following java snippet code?

```
int cnt=0;
    while(true)
    {
        if(cnt > 4)
            break;
        if(cnt==0)
        {
            cnt++;
        }
        System.out.print(cnt + ",");
        cnt++;
    }
```

- a) 0,1,2,3,4,
- b) 1,2,3,4,
- c) 1,2,3,4
- d) Compiler error

10) What is the output of the below Java code snippet?

```
int time=50;
do
{
System.out.print(time + ",");
time++;
}while(time < 53);
```

- a) 50,50,50,
- b) 50,51,52,
- c) 51,52,53,
- d) Compiler error

11) What is the output of the below Java code snippet?

```
for(int i=1; i<=2;i++)
{ for(int j=1; j<=2;j++)
{
    if( j > i )
        System.out.print(j );
}
}
```

- a) 1,1,1
- b) 1,2,2,
- c) 2
- d) Compiler error

12) What is the output when the following method has been executed?

```
public void methodA()
{
    int i, s = 0;
    for (int k = 0; k < 5; k++) {
        i = 0;
        do {
            i++;
            s++;
        } while (i < k);
    }
    System.out.println(s);
}
```

- a) 15
- b) 14
- c) 11**
- d) 10

13) What is the last output when the code segment executes?

```
int p = 1;
int q = 1;
while (p < 6)
{
    while (q < 6)
    {
        q += p;
        p++;
    }
}
System.out.println(p + q);
```

- a) 9
- b) 14
- c) Infinite loop**
- d) Compilation error

14) What is the output of the below Java program with a final local variable?

<pre>public class AClass { private int item; void change(int cars) { this.item = cars; } }</pre>	<pre>public class Test { public static void main(String[] args){ AClass obj = new AClass(); obj.change(30); System.out.println(obj.item); } }</pre>
--	---

- a) 50
- b) 30
- c) 20
- d) **Compilation error**

15) What is the output of the below java class?

<pre>public class Constructor { private int count; Constructor(int count) { System.out.println("Count=" + this.count); } }</pre>	<pre>public class Test { public static void main(String[] args){ Constructor con =new constructor(); } }</pre>
--	--

- a) Count=0
- b) Count=10
- c) **Compilation error**
- d) None of the above

16) Java method signature is a combination of ____.

- a) Return type
- b) Method name
- c) Argument List
- d) **All the above**

17) The purpose of a Java constructor is ____.

- a) **Initialization of variables with passed data**
- b) Writing custom code
- c) Accepting other objects as inputs
- d) All the above

18) What is the output of the below Java program?

<pre>public class Constructor { int birds; Constructor() { this(20); } Constructor(int birds) { this.birds=birds; System.out.println("Birds=" + birds); } }</pre>	<pre>public class Test { public static void main(String[]args) { Constructor con = new Constructor(); } }</pre>
---	---

- a) Birds=0
- b) Birds=10
- c) **Birds=20**
- d) Compilation error

19) What is the output of the below Java program with multiple methods?

<pre>public class Question { void show(int a, char b) { System.out.print("KSU "); } void show(char a, int b) { System.out.println("CCIS "); } }</pre>	<pre>public class Test { public static void main(String[] args){ Question obj = new Question(); obj.show(10, 'A'); obj.show('B', 10); } }</pre>
---	---

- a) KSU KSU
- b) CCIS CCIS
- c) **KSU CCIS**
- d) Compilation error

20) What is the output of following program?

<pre>public class AClass { public static int var1; }</pre>	<pre>public class Test { public static void main(String[] args){ AClass.var1=5; AClass obj1 = new AClass(); AClass obj2 = new AClass(); obj1.var1++; System.out.println(obj2.var1); } }</pre>
--	---

- a) 5
- b) **6**
- c) 0
- d) Compilation error

21) What is wrong in the following code (given that both classes are written in the same java file)?

```
class TempClass {
    int i;
    public void TempClass(int j) {
        int i = j;
    }
}

public class C {
    public static void main(String[] args) {
        TempClass temp = new TempClass(2);
    }
}
```

- a) The program has a compilation error because TempClass does not have a default constructor.
- b) The program has a compilation error because TempClass does not have a constructor with an int argument.**
- c) The program compiles fine, but it does not run because class C is not public.
- d) The program compiles and runs fine.

22) What is the output of the following program, if any?

<pre>public class Customer { public String name; // line 2 public int id; public Customer(String n, int d) //line 5 { set(n,d); } public void set(String s, int i){//line 8 name = "null"; id = 10; } }</pre>	<pre>import java.util.Scanner; public class FinalTest { public static void main(String[] args) { Scanner kb = new Scanner(System.in); Customer cst = new Customer("Saad", 1111); System.out.println("name="+cst.name+" ID="+ cst.id); } }</pre>
---	---

- a) name=Saad ID=1111
- b) name=null ID=10**
- c) There will be a compilation error caused by line 2 in the class "Customer".
- d) There will be a compilation error caused by line 5 in the class "Customer".
- e) There will be a compilation error caused by line 8 in the class "Customer".

23) What is the output of the following program ?

<pre>public class Test2 { public double display(int x, int y) { System.out.print(x+y); return x+y; } public int display(int y, int x) { System.out.print(x+y); return x+y; } }</pre>	<pre>Public class CTest2 { public static void main(String[]args) { Test2 t2 = new Test2(); double d = t2.display(3, 4); } }</pre>
---	---

- a) Compiler error because methods have same signature, so we have duplicate method
- b) 7
- c) 14
- d) 7 7
- e) A & B

24) What is the output of the following code fragment?

```
int[] numbers = {2, 5, 3, 1, 6};  
int number = numbers[ numbers[1] ];  
System.out.println( number );
```

- a) 5
- b) 6
- c) 2
- d) Run-time error (ArrayIndexOutOfBoundsException)
- e) 1

25) What is the output of the following program, if any?

```
public class Evaluate {  
    public static void main(String args[]) {  
        int arr[] = { 3, 2, 6, 5, 4, 3};  
        int n = 5;  
        n = arr[arr[n] / 2];  
        System.out.println(arr[n] / 2);  
    }  
}
```

- a) 2
- b) 3**
- c) 4
- d) 6
- e) There is a run-time error.

Part II (15 Marks)

Q1 (5 Marks): Assume we have the following class:

```
class Q1 {
    private int a;
    private int b;
    private int c;
    public void setA(int a){this.a = a;}
    public void setB(int b){this.b = b;}
    public void setC(int c){this.c = c;}
    public int getA(){return a;}
    public int getB(){return b;}
    public int getC(){return c;}

    public int m1(int a, int b)
    {
        for (int i = 0; i < 5; i++)
        {
            a++;
            b++;
        }
        return a + b;
    }
    public boolean m2(int x, int y)
    {
        a = x + 1;
        b = y / 2;
        return m1(a, b) + x + y - a - b < c;
    }
}
```

A- Suppose we run the code:

```
Q1 obj = new Q1();
obj.setA(3); obj.setB(2); obj.setC(1);
int x = obj.m1(1,2);
```

what will be the value of x, obj.a, obj.b, obj.c?

Answer A:

B- Suppose we run the code:

```
Q1 obj = new Q1();
obj.setA(3); obj.setB(2); obj.setC(1);
boolean b = obj.m2(1,2);
```

what will be the value of b, obj.a, obj.b, obj.c?

Answer B:

Answer

- A. 13 3 2 1 2 pts
B. false 2 1 1 3 pts

Q2 (5 Marks): Complete the following program by filling in each of the dotted(.....) lines, so its output will be the following:

30 45

```
public class CR {
private int ..... ;
public ..... (int num)
{
this.num=.....*2;
}
..... get()
{
return num;
}
public static void main(String args[]) {
CR ..... =new CR(20);
CR ..... = new CR(..);
// display the value of the instance attribute of the first object.
System.out.print( .....+ " ");
// display the value of the instance attribute of the second object.
System.out.println( .....);
}
}
```

Answer:

```
public class CR {
private int num ;            0.5pt
public CR (int num)        0.5pt
{
this.num=num*2;            0.5pt
}
public int getnum()        1pt
{
return num;
}
public static void main(String args[]) {
CR obj =new CR(20);            0.75 pt
CR obj1 = new CR(15);        0.75 pt
System.out.print( obj.getnum()+ " "); 0.75
System.out.println( obj1.getnum()); 0.75
} }
```

Q3 (5 Marks): The method `isSorted(int[] numbers)` checks if an array is sorted in ascending order. The method returns **true** if the array `numbers[]` is sorted, and returns **false** otherwise. For example:

When `numbers = {-1 , 2 , 4 , 4 , 6 , 20}` the method should return **true**.

When `numbers = {8 , 2 , 4 , 2 , 6 , 20}` the method should return **false**.

Complete the implementation of `isSorted` by filling in each of the dotted(.....) lines:

```
public ..... isSorted(int[] numbers) {  
    for (int i = 0; i < .....; i++) {  
        if (.....)  
            return .....;  
    }  
    return .....;  
}
```

Answer:

```
public boolean isSorted(int[] numbers) {    1 pt  
  
    for (int i = 0; i < numbers.length - 1; i++) {    1 pt  
  
        if (numbers[i] > numbers[i + 1])    1 pt  
  
            return false;    1 pt  
  
    }  
    return true;    1 pt  
}
```