King Saud University

College of Computer and Information Sciences

Computer Science Department

Course Code:	CSC 111
Course Title:	Introduction to Programming 1
Semester:	Fall 2016-17
Exercises Cover Sheet:	**Mid 2 Exam A**

Duration: 90 min

Student Name:	
Student ID:	
Student Section No.	

Tick the Relevant	Computer Science B.Sc. Program ABET Student Outcomes	Question No. Relevant Is Hyperlinked	Covering %
√	**a) Apply knowledge of computing and mathematics appropriate to the discipline;**	**1,2**	**50%**
	b) Analyze a problem, and identify and define the computing requirements appropriate to its solution;		
	c) Design, implement and evaluate a computer-based system, process, component, or program to meet desired needs;		
	d) Function effectively on teams to accomplish a common goal;		
	e) Understanding of professional, ethical, legal, security, and social issues and responsibilities;		
	f) Communicate effectively with a range of audiences;		
	g) Analyze the local and global impact of computing on individuals, organizations and society;		
	h) Recognition of the need for, and an ability to engage in, continuing professional development;		
√	**i) Use current techniques, skills, and tools necessary for computing practices.**	**1,2**	**50%**
	j) Apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices;		
	k) Apply design and development principles in the construction of software systems of varying complexity;		

Question 1. (5 Marks)
Put your answers of the question 1 (**multiple choice questions**) in the following table:

Question	Answer
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

1) Which of the following is not nested loop?

a)
```
for(i=0;i<10;i++)
   for(j=1;j<i+2;j++)
```

b)
```
for(i=0;i<10;i++)
  System.out.println(i);
for(j=1;j<i+2;j++) System.out.println("j="+j);
```

c)
```
for(i=0;i<10;i++)
   while(j%2!=0){ System.out.println(j+" "+(++j));}
```

d)
```
for (i=0; i<10,i++){
System.out.println(i)
for(j=1;j<i+2;j++) System.out.println("j="+j); }
```

2) Which `for` loop is equivalent to the following `while` loop

```
x=1;
while(x<10){
  System.out.println(x+"   ");
  ++x;
}
```

a) `for(x=1;x<10;x++){System.out.println(x+"   ");  }`

b) `for(x=0;x<=10;x++){System.out.println(x+"   ");  }`

c) `for(x=1;x<=10;++x){System.out.println(x+"   ");  }`

d) `for(x=0;x<=10;++x){System.out.println(x+"   ");  }`

3) What values of `j` and `k` will make this program print hello?

```
int j = ----------;
int k = ----------;
for (int i = j; i < k; i++)   {
     j++;
     System.out.println("hello");
}
```

a) `j = 5, k = 4`

b) `j = 1, k = 2`

c) `j = 3, k = 2`

d) `j = 9, k = 5`

4)

```
int x = 1, y = 6;
while (y--){
    x++;
}
System.out.println("x = " + x +" y = " + y);
```

Which statement is true?

a) x = 6 y = 0

b) x = 7 y = 0

c) x = 6 y = -1

d) Compilation fails.

5) Which of the pattern is produced by the following code?

```
int i, j, k;
for (i = 1; i <= 7; i++) {
     for (j = 1; j <= i; ++j)
          System.out.print(j);
     for (k = 7 - i; k >= 1; k--)
          System.out.print("*");
     System.out.println("");
}
```

a)	b)	c)	d)
******1	1234567	1******	7654321
*****21	123456*	12*****	*654321
****321	12345**	123****	**54321
***4321	1234***	1234***	***4321
**54321	123****	12345**	****321
*654321	12*****	123456*	*****21
7654321	1******	1234567	******1

6) How many times will the following code print "Be careful"?

```
int count = 10;
while (count-- >= 10) {
System.out.println("Be carefull");
count+=1;
}
```

a) 8
b) 9
c) 10
d) infinite loop

7) Given following class:

```
public class While {
   public void loop(){
       int x= 0;
       while ( 1 ){      /* Line 6 */
          System.out.print("x plus one is " + (x + 1)); //Line 8 */
        }
    }
}
```

Which statement is true?
a) There is a syntax error on line 1.
b) There are syntax errors on lines 1 and 6.
c) There is a syntax error on line 6.
d) There are syntax errors on lines 1, 6, and 8.

8) This code will not compile. What is wrong with it?

```
int a = 0, b = 0;
     for (int i = 0; i < 5; i++) {
          if (++a > 2 || ++b > 2) {
               a++;
          }
     }
     System.out.println("a=" + a + " b=" + b);
     System.out.println("Value of i after completion of loop:
" + i);
```

a) loop counter `i` is not initialized
b) loop counter `i` should be declared before the loop
c) loop counter `i` is initialized to zero
d) loop counter `i` is not updated inside the loop

9) Consider the following code segment:

```
public class MyClass{
public MyClass(){/*code*/} // more code...
}
```

To create an object of type MyClass, you would write:
a) `MyClass mc = new MyClass();`
b) `MyClass mc = MyClass();`
c) `MyClass mc = new MyClass;`
d) It can't be done. The constructor of MyClass should be defined as:

```
public void MyClass(){/*code*/}
```

10) Suppose you have the following class:

```
public class Point {
int x, y;
public Point(int x, int y) { this.x = x; this.y = y; }
public Point() { this(10, 20); }
public int getX() { return this.x; }
public int getY() { return this.y; }}
What is the output of the following code, if any:
public class PointTest {
     public static void main(String args[]) {
         Point p = new Point();
         System.out.println(p.getX());}}
```

a) 0
b) 10
c) 20
d) There is a compilation error.

Question 2. (5 Marks)

A) What is the output of the following program? (2 marks)

```
public class MyClass {
     private int a = 5;
     public void setA(int param){
          a = param;
     }
     public int getA(){
          return a;
     }
     public MyClass m1(){
          MyClass o = new MyClass();
          o.a = a + 2;
          return o;
     }
     public void m2(MyClass oParam){
          oParam.a = a + 1;
     }
     public void m3(MyClass oParam){
          oParam = new MyClass();
          oParam.a = a;
     }
}
     public static void main(String[] args){
          MyClass o1 = new MyClass();
          o1.setA(10);
          MyClass o2 = o1.m1();
          MyClass o3 = new MyClass();
          o2.m3(o3);
          MyClass o4 = new MyClass();
          o1.m2(o4);
          System.out.println("o1.a = " + o1.getA() + ", o2.a = " +
o2.getA() + ", o3.a = " + o3.getA() + ", o4.a = " + o4.getA());
     }
}
```

B) Suppose you have the following class: (3 marks)

```
class Q2 {
private int a;
private int b;
public Q2() { a = 3; b = 5;}
public Q2(int a, int b) { this.a = a; this.b = b;}
public void setA(int a){this.a = a;}
public void setB(int b){this.b = b;}
public int getA(){return a;}
public int getB(){return b;}

public boolean m(int a, int B){
     b = ++B*10;
     this.a = a*3%15;
     return b > a;
}
}
```

What is the output of main method in class TestQ2:

```
public class TestQ2 {
     public static void main(String args[]){

          Q2 obj1 = new Q2(5,10);
          Q2 obj2 = new Q2();

          System.out.println("obj1.a = " + obj1.getA());
          System.out.println("obj2.b = " + obj2.getB());

          obj2.setA(2); obj2.setB(15);

          System.out.println("obj2.a = " + obj2.getA());
          System.out.println("obj2.b = " + obj2.getB());

          for(int i = 1; i <= 3  ; i++)
          {
               if(i % 3 == 0 && obj1.m(20, i))
                    obj1 = obj2;

               System.out.println("obj2.a = " + obj2.getA());
               System.out.println("obj1.b = " + obj1.getB());
          }}}
```

Result

Question No.	Relevant Student Outcome	SO is Covered by %	Full Mark	Student Mark	Assessor's Feedback
1	a	60	6		
2	i	40	4		
Totals		100%	10		

I certify that the work contained within this assignment is all my own work and referenced where required. **Student Signature:** **Date:**		**Feedback Received:** **Student Signature:** **Date:**