# King Saud University

**College of Computer and Information Sciences**

**Computer Science Department**

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| **Course Code:** | CSC 111 |
| **Course Title:** | Introduction to Programming |
| **Semester:** | Fall 2015 |
| **Exercises Cover Sheet:** | **Mid 1 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 (6 Marks)**

Put your answer of the question 1 (**multiple choice questions**) in the following table:

| Question | Answer |
|---|---|
| 1 | |
| 2 | |
| 3 | |
| 4 | |
| 5 | |
| 6 | |
| 7 | |
| 8 | |
| 9 | |
| 10 | |
| 11 | |
| 12 | |

1. **Suppose x = 1, y = -1, and z = 1. What will be displayed by the following statement?**

```
if (x > 0)
   if (y < 0)
      System.out.println("Ahmed");
   else if (z > 0)
      System.out.println("Khaled");
```

**A. <u>Ahmed</u>**
**B. Khaled**
**C. Ahmed**
**Khaled**
**D. nothing**

2. **What is the output of the following program:**

```
int x = 3;
int y = 4;
if (x > 0)
   if (y = 4)
      System.out.println("no error");
   else
      System.out.println("error");
```

**A. Error**
**B. No error**
**C. <u>The program has a compile error</u>**
**D. The program will not display anything**

3. **Assume x = 4, which of the following Boolean expressions is true?**

**A. `!(x == 4)`**
**B. `x != 4`**
**C. `x == 5`**
**<u>D. `x != 5`</u>**

**4. What is the output of the following code:**

```
int x = 5;
switch(x / 2)
{
    case 1:
           System.out.print("First Case");
    case 2:
           System.out.print("Second Case");
    case 3:
           System.out.print("Third Case");
           break;
    default:
           System.out.print("Default Case");
           break;
}
```

**A.First Case**
**B.Second CaseThird Case**
**C.Second Case**
**D.Second CaseThird CaseDefault Case**

**5. What is the output of this code?**

```
int x = 0;
while(x <= 10)
{
      if((x % 2) == 0)
            System.out.print(x + ",");
      x++;
}
```

**A. 2,3,4,5,6,7,8,9,10,**
**B. 1,3,5,7,9,**
**C. 0,2,4,6,8,10,**
**D. 2,4,6,8,10,**

**6. What is the output of this code, if any?**

```
int number = 1;
while(number <= 3)
```

```
{
      if((number % 2) != 0)
            System.out.print(number + ",");

      number-=1;
}
```

A. 1,2,3,
B. 1,3
C. Nothing
D. <u>Infinite Loop</u>

**7. What is the output of this program?**

```
class increment {
      public static void main(String args[])
      {
            double var1 = 1 + 5;
            double var2 = var1 / 4;
            int var3 = 1 + 5;
            int var4 = var3 / 4;
            System.out.print(var2 + " " + var4);

      }
}
```

A. 1 1
B. 1
<u>C. 1.5 1</u>
D. 1.5 1.0

**8. What is the output of this program?**

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

```
{
      int x , y;
      x = 10;
      x++;
      --x;
      y = x++;
      System.out.println(x + " " + y);
}
}
```

**A. 11 11**
**B. 10 10**
**C. 11 10**
**D. 10 11**

**9. What is y after the following switch statement is executed?**

```
int x = 3; int y = 4;
switch (x + 3) {
   case 6: y = 0;
   case 7: y = 1;
    default: y += 1;
}
```

**A. 1**
**B. 2**
**C. 3**
**D. 4**
**E. 0**

**10. Analyze the following program fragment:**

```
int x;
double d = 1.5;
switch (d) {
case 1.0: x = 1;
case 1.5: x = 2;
case 2.0: x = 3;
}
```

**A. The program has a compile error because the required break statement is missing in the switch statement.**
**B. The program has a compile error because the required default case is missing in the switch statement.**
**C. The switch control variable cannot be double.**
**D. No errors.**

**11. What is the output of the following code fragment:**

```
int num = 10; int x = 3;
while (num != 2) {
  if (num %4 == 0)
```

```
        x = num;
      else
        num--;
    }
    System.out.print(x);
```

A. 3
B. 8
C. 4
D. <u>Infinite loop</u>

**12. What is the output of the following program:**

```
public class TestWhile {
      public static void main (String[] args){
            int counter = 0;
            boolean flag = false;
            while (!flag || counter <= 5){
                  System.out.print(counter);
                  if (counter * 2 - 3 == 11)
                        flag = true;
                  counter++;
            }

      }
}
```

A. <u>01234567</u>
B. 012345
C. 12345
D. 01234

**Q 2 (4 Marks)**

**A. The following code fragment is intended to compute *N!* using a *while*-loop (Assume N has a value):**

```
1  int i = 1;
2  int result = 0;
3  while (i <= N) {
4    result = result * N;
5    i++;
6  }
```

There are 2 mistakes that cause a logical error when this code is executed.
Write down the number(s) of the line(s) having these errors, and rewrite the corresponding correct statements:

| **Line number** | **Correct statement** |
|---|---|
| ……2……. | …int result = 1…….……..……..……. |
| ……4……. | result = result * i;…….……..……..……. |

**B. The following program is supposed to tell if someone in a child, an adult or an elderly based on his age. Assuming input is an already declared Scanner object. There is a compile time error and a logical error in the following code fragment.**

```
1  int birthYear = input.nextInt();
2  int currentYear = input.nextInt();
3  int age = currentYear - birthYear ;
4  if (age < 18)
5    System.out.println("Child”);
6  if (18 <= age < 60)
7    System.out.println("Adult”);
8  else
9    System.out.println("Elderly”);
```

1. What line will cause the compilation (Syntax) error?
   ……6……..
2. What could be a possible correction? (write a correct java statement that eliminates the error)
   …if (age >= 18 && age < 60)……..……..……..……..……..……..
3. What line will cause the logical error?
   …8……..
4. Give below example values for currentYear and birthYear to demonstrate this error
   currentYear: 2015……..…….. birthYear: ……2014…..……..

any values that will make age to be less than 18

# 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 | | |

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