

CIS1068, Program Design and Abstraction

Part 1: Given the value of variable $x=3$, write down the evaluation value (true/false) of the expression.

- 1) (**F**) if ($x>3 \ \&\& \ (x<4 \ || \ x >6)$)
- 2) (**T**) if ($x>2 \ \&\& \ (x<4 \ || \ x >6)$)
- 3) (**F**) if ($x>3 \ \&\& \ x<4 \ || \ x >6$)
- 4) (**T**) if ($x>2 \ \&\& \ x<4 \ || \ x >6$)
- 5) (**F**) if ($x>2 \ \&\& \ (x>4 \ || \ x <0)$)
- 6) (**F**) if ($x>3 \ || \ (x>4 \ \&\& \ x <6)$)
- 7) (**F**) if ($x>2 \ \&\& \ x>4 \ || \ x <0$)
- 8) (**F**) if ($x>3 \ || \ x>4 \ \&\& \ x <6$)
- 9) (**T**) if ($x>2 \ || \ (x<4 \ \&\& \ x >6)$)
- 10) (**T**) if ($x>2 \ || \ x<4 \ \&\& \ x >6$)
- 11) (**F**) if ($x>3 \ || \ (x<4 \ \&\& \ x >6)$)
- 12) (**F**) if ($x>3 \ || \ x<4 \ \&\& \ x >6$)

Part 2:

1. The following program will print out “passed” (**T**)

```
grade = 70
if (grade >=70)
System.out.println(“passed”);
```
2. The following program will print out “passed” (**F**)

```
grade =70
if (grade >70)
System.out.println (“passed”);
else
System.out.println( “failed”);
```
3. The following program will print out “passed” and “good” (**T**)

```
grade =70
if (grade >= 60) {
if (grade >= 70)
System.out.println ( “passed”);
System.out.println (“good”);
}
else
System.out.println (“failed”);
```

4. The following program will print out “passed” and “failed” (F)

```
grade =70
if (grade >= 60) {
if (grade >= 70)
System.out.println ( “passed”);
System.out.println ( “good”);
}
else
System.out.println ( “failed”);
```

5. The following program will print out “good” and “failed” (F)

```
grade =70
if (grade >= 60) {
if (grade >= 70)
System.out.println ( “passed”);
System.out.println ( “good”);
}
else
System.out.println ( “failed”);
```

Part 3:

1) The following program will print out (A)

```
x=50;
if (x<60)
System.out.println ( “Case 1”);
else
if (x < 80)
System.out.println ( “Case 2”);
else
System.out.println ( “Case 3”);
```

(a) Case 1 (b) Case 2 (c) Case 3 (d) Others

2) The following program will print out (B)

```
x=90;
if (x<60)
System.out.println ( “Case 1”);
System.out.println ( “Case 2”);
```

(a) Case 1 (b) Case 2 (c) Others

3) The following program will print out (C)

```
x=50;
y=1;
if (x>60)
y=2;
if (x < 80)
y=3;
else
y=4;
System.out.println (y);
```

(a) 1 (b) 2 (c) 3 (d) 4

4) The following program will print out (C)

```
x=50;
y=0;
if (x>60)
y+=1;
if (x < 80)
y+=2;
else
y+=3;
System.out.println (y);
```

(a) 0 (b) 1 (c) 2 (d) 3 (e) 4 (f) 5 (g) 6

5) The following program will print out (D)

```
x=50;
y=0;
if (x>60) {
y+=1;
if (x < 80)
y+=2;
}
else
y+=3;
System.out.println (y);
```

(a) 0 (b) 1 (c) 2 (d) 3 (e) 4 (f) 5 (g) 6

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```
Scanner keyboard = new Scanner(System.in);
int grade = keyboard.nextInt();
if (grade >=60)
    System.out.print( "passed");
else
    System.out.print( "failed");
```

Complete the following programs to print the same results as the above program does.

- 1)

```
if (grade ___>___ 59)
    System.out.print( "passed");
else
    System.out.print( "failed");
```
- 2)

```
if (60 ___<=___ grade)
    System.out.print( "passed");
else
    System.out.print( "failed");
```
- 3)

```
if (59 ___<___ grade)
    System.out.print( "passed");
else
    System.out.print( "failed");
```
- 4)

```
if (60 ___>___ grade)
    System.out.print( "failed");
else
    System.out.print( "passed");
```
- 5)

```
if (59 ___>=___ grade)
    System.out.print( "failed");
else
    System.out.print( "passed");
```
- 6)

```
if (!(grade ___>___ 59))
    System.out.print( "failed");
else
    System.out.print( "passed");
```
- 7)

```
if (!(grade ___>=___ 60))
    System.out.print( "failed");
else
    System.out.print( "passed");
```
- 8)

```
if (!(59 ___<___ grade))
    System.out.print( "failed");
else
    System.out.print( "passed");
```
- 9)

```
if (!(60 ___<=___ grade))
    System.out.print( "failed");
else
    System.out.print( "passed");
```

Complete the following programs so that they can print out the expected results.

1) For any positive number of variable “g”, print out “positive”.

```
if (g > 0) // g >= 1 is incorrect, e.g., 0.5
    System.out.print (“positive”);
```

2) Identify the value for a given “int” type variable “g”. Print out “positive” if it is positive; otherwise, print out “not positive”.

```
if (g > 0) // g >= 1 is ok either
    System.out.print (“positive”);
else
    System.out.print (“not positive”);
```

3) Identify the value for a given “int” type variable in “g”. If it is in the range of [0..100], print out the corresponding answer “Yes”; otherwise, “No”.

```
if (g >= 0 && g <= 100)
    System.out.print (“Yes”);
else
    System.out.print (“No”);
```

4) Identify the value for a given “int” type variable “g”. If it is in the range of (0..100), print out the corresponding answer “Yes”; otherwise, “No”.

```
if (g > 0 && g < 100)
    System.out.print (“Yes”);
else
    System.out.print (“No”);
```

5) Identify the value for a given “int” type variable in “g”. If it is in the range of [0..100] ∪ [300..400], print out the corresponding answer “Yes”; otherwise, “No”.

```
if (g >= 0 && g <= 100 || g >= 300 && g <= 400)
    System.out.print (“Yes”);
else
    System.out.print (“No”);
```

6) Identify the value for a given “int” type variable in “g”. If it is in the range of [0..400] but not in [100..300], print out the corresponding answer “Yes”; otherwise, “No”.

```
if (g >= 0 && g <= 400 && !(g >= 100 && g <= 300))
// g >= 0 && g < 100 || g > 300 && g <= 400 is ok either
    System.out.print (“Yes”);
else
    System.out.print (“No”);
```

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1. Given the percentage of cloud cover via keyboard (stored in variable n), display the appropriate descriptor according the following table.

Call number	Location
0 to 30	clear
31 to 70	partly cloudy
71 to 99	cloudy
100	overcast

```
int n = keyboard.nextInt();
```

```
if (n >= 0 && n <= 30)
    System.out.println("clear");
else
    if (n > 30 && n <= 70)
        System.out.println("partly cloudy");
    else
        if (n > 70 && n < 100)
            System.out.println("cloudy");
        else
            if (n == 100)
                System.out.println("overcast");
            else
                System.out.println("Invalid data");
```