

1. (10 Points) true or false?

| | |
|--|--|
| <p>a. Given the following variable definitions:</p> <pre>int numPeople = 10, numCars = 2; char userKey = 'q'; boolean found = false;</pre> <p>The logical expression:</p> <pre>((numPeople >= 10) && (numCars < 4) && (found)) (userKey == 'q');</pre> | <p>Evaluates To</p> <p>true</p> <p>or</p> <p>false</p> |
| <p>b. Given the following variable definitions:</p> <pre>String str1 = "Apples", str2 = "apples";</pre> <p>The following expression:</p> <pre>str1.equals(str2);</pre> | <p>Evaluates To</p> <p>true</p> <p>or</p> <p>false</p> |
| <p>c. Given the following variable definition:</p> <pre>String userString = "I Love Java!!!"</pre> <p>The following expression:</p> <pre>Character.isLetter(userString.charAt(3));</pre> | <p>Evaluates To</p> <p>true</p> <p>or</p> <p>false</p> |
| <p>d. Given:</p> <pre>for (int i = 0 ; i < 5 ; i++) { if (i < 10) { continue; } System.out.println("i = " + i); }</pre> <p>The loop will print some output.</p> | <p>true</p> <p>or</p> <p>false</p> |
| <p>e. Given the following array definition:</p> <pre>int[] arr = new int[10];</pre> <p>The following loop will encounter a problem:</p> <pre>for (int i = 0 ; i <= arr.length ; i++) { arr[i] += 1; }</pre> | <p>true</p> <p>or</p> <p>false</p> |

2. (20 Points) Given `numRows` and `numColumns`, print a list of seats in a theater. Rows are numbered and columns are lettered.

For example, a theater with 3 rows and 4 columns should appear as follows:

```
1A 1B 1C 1D
2A 2B 2C 2C
3A 3B 3C 3D
```

Hint: if you have `char c = 'A'`, performing the `c++` operation will change `c` to the letter `'B'`.

```
public class TheaterSeats {

    public static void main(String[] args) {
        int numRows = 9;
        int numColumns = 15;

        /* Your solution goes here */

    }
}
```

3. (30 Points) What is the output of the following program?

```
public class Switch1 {  
  
    public static void main(String[] args) {  
        for (int i = 5; i >= 0; i--) {  
            switch (i) {  
                case 0:  
                    System.out.println(i + ":" + i);  
                case 1:  
                    System.out.println(i + ":" + i * 2);  
                    break;  
                case 2:  
                    System.out.println(i + ":" + i * 3);  
                case 3:  
                    System.out.println(i + ":" + i * 4);  
                    break;  
                case 4:  
                    System.out.println(i + ":" + i * 5);  
                default:  
                    System.out.println(i + ":" + i * 8);  
                    break;  
            }  
        }  
    }  
}
```

Output:

4. (30 Points) What is the output of the following program?

```
public class BreakContinue1 {  
  
    public static void main(String[] args) {  
        for (int i = 0; i <= 6; i += 2) {  
            for (int j = 0; j <= 6; j += 2) {  
                if (i == j) {  
                    break;  
                } else if (i < j) {  
                    continue;  
                }  
                System.out.println("i = " + i + " : " + "j = " + j);  
            }  
        }  
    }  
}
```

Output:

5. (30 Points) Write a complete Java program to read a list of exam grades given as int's in the range of 0 to 100 into an array. You can assume that the maximum number of grades is 100. Use a negative number as a sentinel value to indicate the end of the input. (The negative value is used only to end the loop, do not use it in your calculations.)

Your prompt to the user to enter a grade should be:

```
Enter a grade:
```

Your program must produce the following output:

```
Average grade = Computed Average Grade  
Number of grades = Number of Grades Entered  
Number of grades >= average = Computed Number of Grades >= Average  
Number of grades < average = Computed Number of Grades < Average
```

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1. (10 Points) true or false?

| | |
|---|--|
| <p>a. Given the following variable definitions:</p> <pre>int numPeople = 10, numCars = 2; char userKey = 'q'; boolean found = false;</pre> <p>The logical expression:</p> <pre>((numPeople <= 10) (numCars > 4) (!found)) && (userKey == 'q');</pre> | <p>Evaluates To</p> <p>true</p> <p>or</p> <p>false</p> |
| <p>b. Given the following variable definitions:</p> <pre>String str1 = "Apples", str2 = "apples";</pre> <p>The following expression:</p> <pre>!str1.equals(str2);</pre> | <p>Evaluates To</p> <p>true</p> <p>or</p> <p>false</p> |
| <p>c. Given the following variable definition:</p> <pre>String userString = "I Love Java!!!"</pre> <p>The following expression:</p> <pre>!Character.isLetter(userString.charAt(4));</pre> | <p>Evaluates To</p> <p>true</p> <p>or</p> <p>false</p> |
| <p>d. Given:</p> <pre>for (int i = 0 ; i < 5 ; i++) { if (i > 3) { continue; } System.out.println("i = " + i); }</pre> <p>The loop will print some output.</p> | <p>true</p> <p>or</p> <p>false</p> |
| <p>e. Given the following array definition:</p> <pre>int[] arr = new int[10];</pre> <p>The following loop will encounter a problem:</p> <pre>for (int i = 0 ; i < arr.length ; i++) { arr[i] += 1; }</pre> | <p>true</p> <p>or</p> <p>false</p> |

2. (20 Points) Given `numRows` and `numColumns`, print a list of seats in a theater. Rows are lettered and columns are numbered.

For example, a theater with 3 rows and 4 columns should appear as follows:

```
A1 A2 A3 A4
B1 B2 B3 B4
C1 C2 C3 C4
```

Hint: if you have `char c = 'A'`, performing the `c++` operation will change `c` to the letter `'B'`.

```
public class TheaterSeats {

    public static void main(String[] args) {
        int numRows = 9;
        int numColumns = 15;

        /* Your solution goes here */
    }
}
```

3. (30 Points) What is the output of the following program?

```
public class Switch2 {  
  
    public static void main(String[] args) {  
        for (int i = 5; i >= 0; i--) {  
            switch (i) {  
                case 0:  
                    System.out.println(i + ":" + i);  
                    break;  
                case 1:  
                    System.out.println(i + ":" + i * 5);  
                case 2:  
                    System.out.println(i + ":" + i * 3);  
                    break;  
                case 3:  
                    System.out.println(i + ":" + i * 9);  
                case 4:  
                    System.out.println(i + ":" + i * 7);  
                default:  
                    System.out.println(i + ":" + i * 8);  
                    break;  
            }  
        }  
    }  
}
```

Output:

4. (30 Points) What is the output of the following program?

```
public class BreakContinue2 {  
  
    public static void main(String[] args) {  
        for (int i = 0; i <= 9; i += 3) {  
            for (int j = 0; j <= 9; j += 3) {  
                if (i == j) {  
                    break;  
                } else if (i < j) {  
                    continue;  
                }  
                System.out.println("i = " + i + " : " + "j = " + j);  
            }  
        }  
    }  
}
```

Output:

5. (30 Points) Write a complete Java program to read a list of exam grades given as int's in the range of 0 to 100 into an array. You can assume that the maximum number of grades is 100. Use a negative number as a sentinel value to indicate the end of the input. (The negative value is used only to end the loop, do not use it in your calculations.)

Your prompt to the user to enter a grade should be:

```
Enter a grade:
```

Your program must produce the following output:

```
Average grade = Computed Average Grade  
Number of grades = Number of Grades Entered  
Number of grades >= average = Computed Number of Grades >= Average  
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```

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1. (10 Points) true or false?

| | |
|--|--|
| <p>a. Given the following variable definitions:</p> <pre>int numPeople = 10, numCars = 2; char userKey = 'q'; boolean found = false;</pre> <p>The logical expression:</p> <pre>(numPeople == 12) (numCars == 3) (!found) (userKey != 'q');</pre> | <p>Evaluates To</p> <p>true</p> <p>or</p> <p>false</p> |
| <p>b. Given the following variable definitions:</p> <pre>String str1 = "Apples", str2 = "apples";</pre> <p>The following expression:</p> <pre>str1.equalsIgnoreCase(str2);</pre> | <p>Evaluates To</p> <p>true</p> <p>or</p> <p>false</p> |
| <p>c. Given the following variable definition:</p> <pre>String userString = "I Love Java!!!"</pre> <p>The following expression:</p> <pre>Character.isWhiteSpace(userString.charAt(6));</pre> | <p>Evaluates To</p> <p>true</p> <p>or</p> <p>false</p> |
| <p>d. Given:</p> <pre>for (int i = 0 ; i < 5 ; i++) { if (i > 0) { continue; } System.out.println("i = " + i); }</pre> <p>The loop will print some output.</p> | <p>true</p> <p>or</p> <p>false</p> |
| <p>e. Given the following array definition:</p> <pre>int[] arr = new int[10];</pre> <p>The following loop will encounter a problem:</p> <pre>for (int i = 0 ; i <= arr.length ; i++) { arr[i] += 1; }</pre> | <p>true</p> <p>or</p> <p>false</p> |

2. (20 Points) Given `numRows` and `numColumns`, print a list of seats in a theater. Rows are numbered and columns are lettered.

For example, a theater with 3 rows and 4 columns should appear as follows:

```
1A 1B 1C 1D
2A 2B 2C 2C
3A 3B 3C 3D
```

Hint: if you have `char c = 'A'`, performing the `c++` operation will change `c` to the letter 'B'.

```
public class TheaterSeats {

    public static void main(String[] args) {
        int numRows = 9;
        int numColumns = 15;

        /* Your solution goes here */

    }
}
```

3. (30 Points) What is the output of the following program?

```
public class Switch3 {  
  
    public static void main(String[] args) {  
        for (int i = 5; i >= 0; i--) {  
            switch (i) {  
                case 0:  
                    System.out.println(i + ":" + i * 2);  
                case 1:  
                    System.out.println(i + ":" + i * 4);  
                case 2:  
                    System.out.println(i + ":" + i * 6);  
                    break;  
                case 3:  
                    System.out.println(i + ":" + i * 7);  
                    break;  
                case 4:  
                    System.out.println(i + ":" + i * 8);  
                default:  
                    System.out.println(i + ":" + i * 9);  
                    break;  
            }  
        }  
    }  
}
```

Output:

4. (30 Points) What is the output of the following program?

```
public class BreakContinue3 {  
  
    public static void main(String[] args) {  
        for (int i = 0; i <= 12; i += 4) {  
            for (int j = 0; j <= 12; j += 4) {  
                if (i == j) {  
                    break;  
                } else if (i < j) {  
                    continue;  
                }  
                System.out.println("i = " + i + " : " + "j = " + j);  
            }  
        }  
    }  
}
```

Output:

5. (30 Points) Write a complete Java program to read a list of exam grades given as int's in the range of 0 to 100 into an array. You can assume that the maximum number of grades is 100. Use a negative number as a sentinel value to indicate the end of the input. (The negative value is used only to end the loop, do not use it in your calculations.)

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```

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1. (10 Points) true or false?

| | |
|---|--|
| <p>a. Given the following variable definitions:</p> <pre>int numPeople = 10, numCars = 2; char userKey = 'q'; boolean found = false;</pre> <p>The logical expression:</p> <pre>(numPeople == 10) && (numCars <=2) && (found) && (userKey == 'q');</pre> | <p>Evaluates To</p> <p>true</p> <p>or</p> <p>false</p> |
| <p>b. Given the following variable definitions:</p> <pre>String str1 = "Apples", str2 = "apples";</pre> <p>The following expression:</p> <pre>!str1.equalsIgnoreCase(str2);</pre> | <p>Evaluates To</p> <p>true</p> <p>or</p> <p>false</p> |
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| <p>d. Given:</p> <pre>for (int i = 0 ; i < 5 ; i++) { if (i >= 0) { break; } System.out.println("i = " + i); }</pre> <p>The loop will print some output.</p> | <p>true</p> <p>or</p> <p>false</p> |
| <p>e. Given the following array definition:</p> <pre>int[] arr = new int[10];</pre> <p>The following loop will encounter a problem:</p> <pre>for (int i = 0 ; i < arr.length ; i++) { arr[i] += 1; }</pre> | <p>true</p> <p>or</p> <p>false</p> |

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For example, a theater with 3 rows and 4 columns should appear as follows:

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Hint: if you have `char c = 'A'`, performing the `c++` operation will change `c` to the letter 'B'.

```
public class TheaterSeats {

    public static void main(String[] args) {
        int numRows = 9;
        int numColumns = 15;

        /* Your solution goes here */
    }
}
```

3. (30 Points) What is the output of the following program?

```
public class Switch4 {  
  
    public static void main(String[] args) {  
        for (int i = 5; i >= 0; i--) {  
            switch (i) {  
                case 0:  
                    System.out.println(i + ":" + i);  
                case 1:  
                    System.out.println(i + ":" + i * 3);  
                case 2:  
                    System.out.println(i + ":" + i * 4);  
                    break;  
                case 3:  
                    System.out.println(i + ":" + i * 9);  
                case 4:  
                    System.out.println(i + ":" + i * 6);  
                default:  
                    System.out.println(i + ":" + i * 5);  
                    break;  
            }  
        }  
    }  
}
```

Output:

4. (30 Points) What is the output of the following program?

```
public class BreakContinue4 {  
  
    public static void main(String[] args) {  
        for (int i = 0; i <= 18; i += 5) {  
            for (int j = 0; j <= 18; j += 5) {  
                if (i == j) {  
                    break;  
                } else if (i < j) {  
                    continue;  
                }  
                System.out.println("i = " + i + " : " + "j = " + j);  
            }  
        }  
    }  
}
```

Output:

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