CIS1068_Practice02_Boolean Variables and Branching

Due Date:
- **10:00 am of 07/10/2107**

Points: **100** points

Section: **Name:**

- **Rules:**
  - This is a programming class, so no points for quick handwritten solutions for Q#3, Q#4 and Q#5.
    - So, you need to print out screenshots from NetBeans showing your final code and output, and staple it with your answer sheet.
  - You will lose points if you make any unnecessary change.

[Q1] [20 points, 2 points for each box] Understand boolean variables

What the computer's memory and screen (if relevant) looks like at the end of each of these programs:

```
public class Boolean-Declarations{
    public static void main(String[] args) {
        boolean b;
        boolean c = true;
        boolean d = false;
        boolean e = c;
        c = false;
    }
}
```

b	c	d	e

```
public class Boolean-Expressions {
    public static void main(String [] args) {
        boolean b = true || false;
        boolean c = false && true;
        boolean d = !b || c;
        b = !b;
        d = !(b && (c || d));
    }
}
```

b	c	d

```
public class Relational-Expressions {
    public static void main(String[] args) {
        int x = 3;
        double y = 4.7;
        boolean b = x <= y && y <= 2 * x;
        boolean c = 2 * x == x + 3;
        boolean d = b && x != 3;
    }
}
```

b	c	d

[Q2] [20 points, 4 points for each box] Tracing if statements

```java
public class Conditions-Basic {
     public static void main(String[] args) {
        boolean b = true;
        System.out.println(b);
        if (b) {
            System.out.println("I am inside if");
        }
        System.out.println("I am inside main");
    }
}
```

Screen Output

```java
public class Complex-Conditions {
public static void main(String[] args) {
        int x = 3;
        double y = 4.7;
        if (x <= y && 2 * x >= y + 1) {
            System.out.println("I am inside if");
        }
        System.out.println("I am inside main");
     }
}
```

Screen Output

```java
public class Conditions-IfElse {
     public static void main(String[] args) {
        int x = 3;
        double y = 4.7;
        if (x > y) {
            System.out.println("x = " + x);
        } else {
            System.out.println("y = " + y);
        }
        System.out.println("I am inside main");
     }
}
```

Screen Output

```java
public class Conditions-If-ElseIf {
     public static void main(String[] args) {
        int x = 3;
        double y = 4.7;
        if (x > y) {
            System.out.println("x = " + x);
        } else if (x > 3) {
            System.out.println("y = " + y);
        }
        System.out.println("I am inside main");
     }
}
```

Screen Output

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```
public class Conditions-If-ElseIf-Else {

    public static void main(String[] args) {
        int x = 3;
        double y = 4.7;
        if (x > y) {
            System.out.println("x = " + x);
        } else if (x > 3) {
            System.out.println("y = " + y);
        } else {
            System.out.println("x <= 3");
        }
        System.out.println("I am inside main ");
    }
}
```

Screen Output

[Q3] [20 points, 5 points for each box] Given the percentage of cloud cover via keyboard (stored in variable data). Write the correct test to display the appropriate descriptor according to the table.

- **Note: You need to provide screen shots from your NetBeans showing code and output.**
    - o **(Video) How to take screenshots in Windows**
    - o **(Video) How to take screenshots in Mac OS.**

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

Hint:
- **Create a NetBeans project called** `CloudCoverage`**, and complete the program.**
- **Use relational expressions and logical operators.**

```java
import java.util.Scanner;

public class CloudCoverage {

    public static void main(String[] args) {

        Scanner keyboard = new Scanner(System.in);
        int data = keyboard.nextInt();

        if (                                    ) {

            System.out.println("clear");

        } else if (                             ) {

             System.out.println("partly cloudy");


        } else if (                             ) {

            System.out.println("cloudy");


        } else if (                             ) {

            System.out.println("overcast");

        } else {
            System.out.println("Invalid data");
        }
    }
}
```

[Q4] [20 points, 5 points for each box] Given the call number of a book via keyboard (stored in variable n), Write the correct test to display the appropriate descriptor according to the table.

- **Note: You need to provide screen shots from your NetBeans showing code and output.**
    - **(Video) How to take screenshots in Windows**
    - **(Video) How to take screenshots in Mac OS.**

Hint:
- **Create a NetBeans project called** `LibraryStacks`**, and complete the program.**
- **Use relational expressions and logical operators.**

Call number	Location
100 to 199	basement
200 to 500 and over 900	main floor
510 to 900 except 700 to 750	upper floor
700 to 750	archives

```java
import java.util.Scanner;

public class LibraryStacks {

    public static void main(String[] args) {

        Scanner keyboard = new Scanner(System.in);
        int callNumber = keyboard.nextInt();

        if (                                           )
        {

            System.out.println("basement");

        } else if (                                    )
        {

            System.out.println("main floor");

        } else if (                                    ) {

            System.out.println("upper floor");

        } else if (                                    )
        {

            System.out.println("archives");

        } else {
            System.out.println("Invalid data");
        }
    }
}
```

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[Q5] [20 points] Writing Java Programs with Conditions

Write a program that reads two ints from the keyboard, and prints a message saying whether the first one _divides_ the second one evenly.

- **Note: You need to provide screen shots from your NetBeans showing code and output.**
    - **(Video) How to take screenshots in Windows**
    - **(Video) How to take screenshots in Mac OS.**