# CS1203 Assignment 8

Fall 2020
Due **Monday November 30ᵗʰ** before **4pm Atlantic** in the Desire2Learn dropbox.
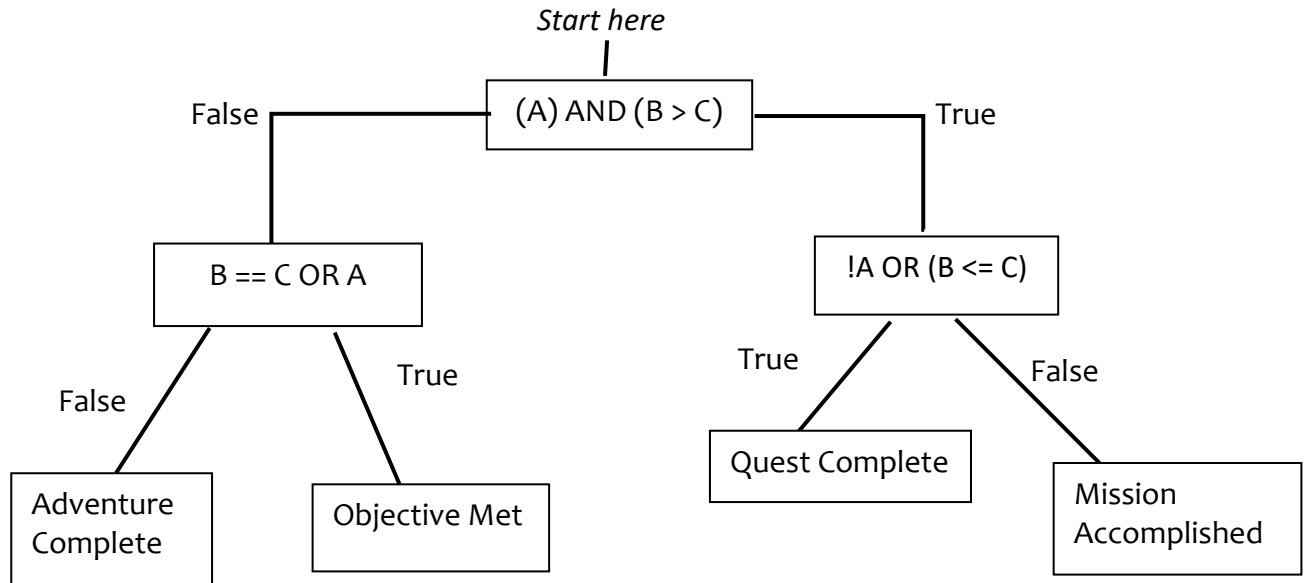
Note: All answers need to be contained in a single document using a word processor. The first page of the document must be a title page (see sample posted in D2L). Once you have finished your document, save the document as a PDF file. **Submit the PDF file** to the appropriate drop box on Desire2Learn. Name your document as follows: **CS1203_YourName_A8**

1. Given the following flow chart determine my mode of transportation if the answer to each statement beginning at the statement labelled *Start here* is: false, true, false, false.
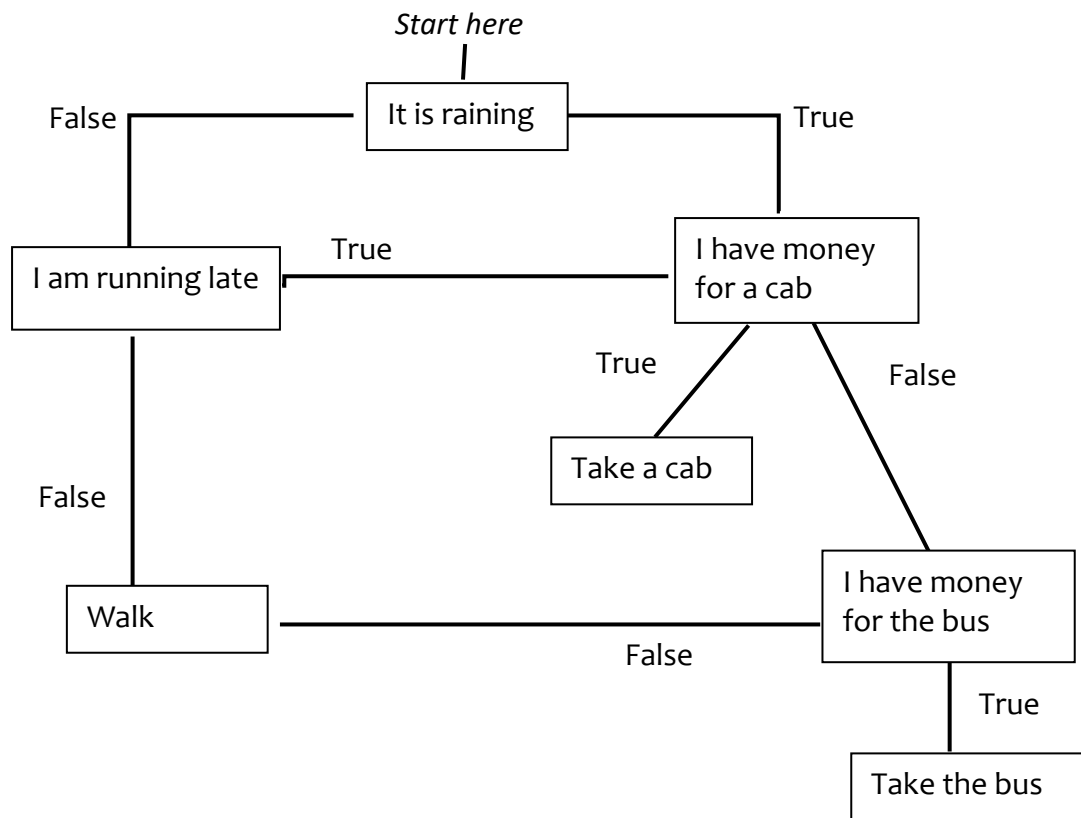
2. What message is reached given the flow chart below where A = true, B = 5, C = 3:

Start here

```
                        ┌──────────────────┐
         False ─────────│  (A) AND (B > C)  │────────── True
         │              └──────────────────┘          │
         │                                             │
   ┌──────────────┐                            ┌──────────────┐
   │  B == C OR A │                            │ !A OR (B <= C) │
   └──────────────┘                            └──────────────┘
     False /    \ True                          True /    \ False
          /      \                                  /        \
 ┌────────────┐ ┌────────────┐          ┌────────────────┐ ┌────────────┐
 │ Adventure  │ │ Objective  │          │ Quest Complete │ │  Mission   │
 │ Complete   │ │ Met        │          └────────────────┘ │Accomplished│
 └────────────┘ └────────────┘                             └────────────┘
```

What values would A, B and C need to be assigned in order to reach one of the other messages? State which message you are selecting and the values assigned to A, B and C such that the message will be reached. Note: A must be a Boolean value and B and C must be integer values.

3. Draw a flow chart for the following problem (you may use a drawing tool or draw it by hand and take a picture to insert into your document). When deciding if you should go to the movies you will make your decision based on the following conditions: If you are done your CS1203 assignment, and there is a student discount then you will go to the movies. If you are done your CS1203 assignment but there is no student discount then you will only go if you were paid this week, otherwise you won't go. If you are not done your CS1203 assignment, but you are done your CS1073 assignment then you will go, otherwise you will not.

4. Write an algorithm that explains the step by step instructions of how to determine the remainder when dividing two positive numbers: number1/number2. However, the instructions must be written for a robot that is not capable of doing any mathematical calculations but has been programmed to know how to push the buttons on a calculator with only the following buttons: addition, subtraction, multiplication, division, equals. The robot is able to follow instructions for pushing the buttons on the calculator and reading the result on the calculator – however, when dividing 2 numbers that are not evenly divisible the calculator only gives a decimal answer (not fractions). Provide the algorithm that the robot must follow in order to **determine the remainder** of dividing two positive numbers: number1/number2. Make sure your steps are clear and specific!

5. Write a pseudocode algorithm that reads in two values and subtracts the smaller value from the larger value and displays the result, the program continues reading in values and subtracting them until the two values that are read in are the same – when this happens the program will end. When the program ends it displays the message "The end!". Note: the two numbers are not necessarily entered in order so you need to determine which value is smaller and always subtract the smaller value from the larger value. If both values are the same (ie: if the values are 2 and 2) then the program should stop reading in values and displays the message "The end!".

6. What is the output of the pseudocode provided?

   Set index to 0
   Set value to 5
   Set result to 0
   WHILE(index < value)
           Set result to result + value
           Set index to index + 2
   Write "The answer is: " + result
   Write "The index is: " + index