

## **ECOR 1606 Winter 2014 - Assignment #1**

**Notes:** By "set of instructions" below, we mean pseudo-code instructions as per Chapter 1 of the notes. Be sure to use the proper keywords, and indent your pseudo-code as per the examples in the notes and in the quizzes done to date.

This is a "pencil and paper" exercise, but you will put your results in a text file "*a1.txt*" (that's letter "a" followed by the number "one", not the letter "I"). You must use Notepad (**not** Wordpad or Word) to create your file. If you use another editor and your file cannot be opened in Notepad by the TA, you will receive a mark of zero.

**Put your name and student number in the first line your file** (for this and all subsequent assignments), and clearly identify each question's answer (i.e. Q1: ... Q2: ... etc.). Submit your file as assignment #1 using the submit program (available on the course web site) before the midnight deadline.

### **Question 1**

Write a set of instructions that will allow a customer to purchase the most expensive beverage from the following list that they can afford using only the cash that they have on hand:

tea: \$3

hot chocolate: \$4

soft drink: \$2

coffee: \$3.50

You may not use any "while" statements. Call the amount of money the customer has "cash". You may compare this to any dollar amount that you like. Your instructions must be of the form "purchase xxx" where "xxx" is one of the beverages above.

### **Question 2**

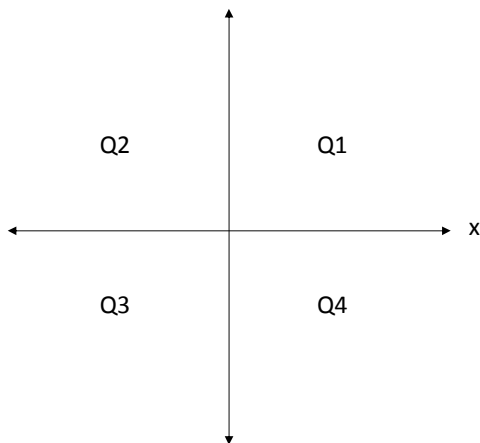
Write a set of instructions that will allow a card player to locate a card in a shuffled standard deck of 52 cards that is in a single pile, face down. You may not use any "if" statements. Call the card the player is looking for "desired card". The only instruction permitted is "flip over top card". After a card has been flipped over you may compare it to any card.

### Question 3

Create an algorithm that takes an (x,y) coordinate on the Cartesian plane and responds with the appropriate statement from the list below:

- The point is on the x-axis.
- The point is on the y axis,
- The point is in quadrant I.
- The point is in quadrant II.
- The point is in quadrant III.
- The point is in quadrant IV.
- The point is the origin

Note: The simplest algorithm should be provided which may require reordering the tests to determine which of the seven statements above is applicable.



You may not use any "while" statements. You should call the coordinates of the point x and y and you may use "if" statements. Your instructions should output the appropriate statement from the list.

### Question 4

The value of pi can be determined with the following infinite summation equation.

$$\pi = 4\left(1 - \frac{1}{3} + \frac{1}{5} - \frac{1}{7} + \frac{1}{9} - \frac{1}{11} + \frac{1}{13} \dots \pm \frac{1}{2n+1}\right)$$

Create an algorithm that for a given input value n (you may assume that n is a positive integer) calculates the series through to the  $1/(2n+1)$  term. You can assume that n is entered correctly and do not need to test for error conditions.

Your solution can use while statements and if statements including comparisons. You may use only addition, subtraction, multiplication, and division and you must put the answer in "result".

Use the submit program to submit your file "a1.txt" as assignment #1.