ECOR 1606 Lab #1

Create a Notepad file "*lab1.txt*". (Be sure to create a Notepad document and not a WordPad or Word document. Ask if you need help.)

Type your name and student number at the top of the file. Below that, type "Q1A:", and then answer Q1A below that (see below). Once you have completed Q1A, type "Q1B:", and then your answers for Q1B. Q1C will be done on paper only and will not be part of the Notepad file. Next you will enter "Q2A:" and your answers, and then "Q2B:" and your answers. Q2C will again be done on paper only.

Once you have completed the lab, use the "submit" program to submit "*lab1.txt*" as lab #1. This is to gain experience with the "submit" program, and to prove your attendance at the lab.

1. Finding the square root of a number:

Q1A: Execute the algorithm below using 3 for "*number*".

Q1B: Execute the algorithm below using 9 for "*number*".

Q1C: Draw a flowchart for the algorithm below and have it checked by the TA (it will not be submitted).

Notes: "*last value*" is the last value typed; "*computed value*" is the previous line's calculation.

Algorithm:

type "1"

compute 0.5 * (1 + *number*)

type *computed value* below the "1" in your file

while (the *last two values* are more than 0.00001 apart) **do**

    compute 0.5 * (*last value* + (*number* / *last value*))

    type *computed value* at the bottom of the list

endwhile

compute the final answer by rounding the *last value* to 4 decimal places

type the *computed value* at the bottom of the list

2. Converting decimal (base 10) numbers to binary (base 2):

Q2A: Execute the algorithm below using 6 for "*number*".

Q2B: Execute the algorithm below using 25 for "*number*".

Q2C: Draw a flowchart for the algorithm below and have it checked by the TA (it will not be submitted).

Notes: "*top number*" is the rightmost number on the top line; "*middle number*" is the rightmost number on the middle line.

Algorithm:

Type: "top:" "middle:", "answer:" each word on its own line.

Type *number* on the top line, and "1" on the middle line.

while (twice *middle number* is less than *top number*) **do**

    type twice *middle number* one space to the right of *middle number* (for example, "1 2")

endwhile

while (*middle number* is greater than or equal to 1) **do**

    if *(top number* is greater than or equal to *middle number*) **then**

        type "1" on the answer line (to the right of any existing digits, with no spaces)

        type *top number* minus *middle number* one space to the right of *top number*

    else

        type "0" on the answer line (to the right of any existing digits, with no spaces)

    endif

    type *middle number* divided by 2 one space to the right of *middle number*

endwhile

"answer:" is the binary representation of *number*