CSI 465 Compiler Design
LAB 6: Nested Structures

Objectives:
a) Understand how nesting various structures are implemented in assembly language.
b) Understand the interrelationship of for loops, while loops, and if-else statements.

1) Exercises:
a) Type the following code in a program in Frances.
   ```c
   int x =1, y =0;
   while( x <9)
     if( x > 5)
       x = x*2;
     else
       x = x+1;
   ```
i) Write the assembly code associated with each line next to the line.
ii) Explain exactly what is occurring in this assembly code.
iii) Is this what you expected? Why or why not?

b) Type the following code in a program in Frances.
   ```c
   int x = 1, y = 0;
   if(x > 5)
     while(x < 9)
       x = x+1;
   ```
i) Write the assembly code associated with each line next to the line.
ii) How does this differ from the nesting the conditional in the loop?
iii) Is this what you expected? Why or why not?

c) Type the following code in a program in Frances.
   ```c
   int x =1, y =0;
   for(y=3; y<7; ++y)
     while(x < 9)
       x = x+1;
   ```
i) Write the assembly code associated with each line next to the line.
ii) Explain exactly what is occurring in this assembly code.
iii) Is this what you expected? Why or why not?

d) Type the following code in a program in Frances.
   ```c
   int x = 1, y = 0;
   while(x < 9)
     for(y=3; y<7; ++y)
       x = x+1;
   ```
i) How does the assemble code differ from the previous example?
e) Type the following code in a program in Frances.

```frances
int x = 0, y = 0, z = 0;
for(x=1; x<3; ++x)
  for(y=2; y<5; ++y)
    for(z=3; z<7; ++z)
      x = x+1;
```

i) Write the assembly code associated with each line next to the line.