CL101
INTRODUCTION TO COMPUTING

LAB 06

Nested Decision Structure & Ternary Operators

NATIONAL UNIVERSITY OF COMPUTER AND EMERGING SCIENCES

Nested If-else Statement

Placing the block of if else statemennt inside an existing if or else block statemeent is called nested If else statement. Each block of nested if ellse, logically perform same as simple if elsee statements. Whenever a user wants to check more than onee condition at a time, the appropriate wayy is to use nested if-else statements. Following is the structure of nested if else statement.

```
IF (logical-expression) THEN
    statements
    IF (logical-expression) THEN
        statements
    ELSE
        statements
    END IF
    statements
ELSE
    statements
    IF (logical-expression) THEN
        statements
    END IF
    statements
END IF
```

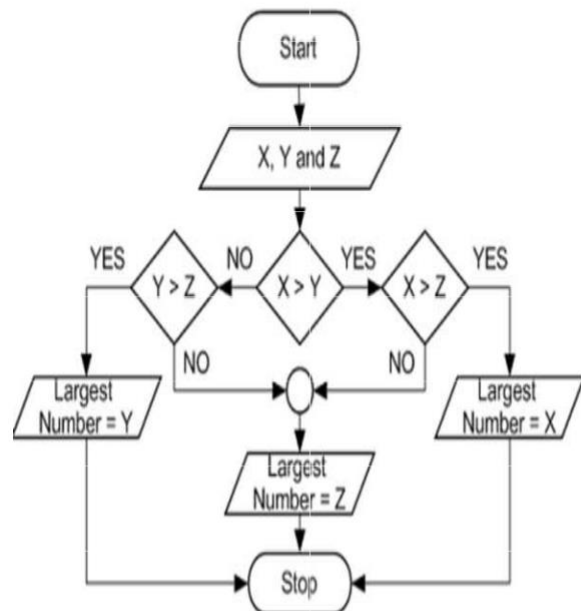## Example Nested If-else statement

Problem

From the given three values, find the largest value.

Algorithm	Flowchhart

Step 1: Input X,Y,Z
Step 2: if(X>Y) then
    If(X>Z) then
      Max= X   [X>Y, X>Z]
    Else
      Max= Z   [Z>X>Y]
Endif
    Else
      If(Y>Z) then
        Max = Y   [Y>X, Y>Z]]
      Else
        Max = Z   [Z>Y>X]
Endif
Endif
Step 3: Print "The largest number is ",Max	

C-Implementation

```c
#include<stdio.h>
main(){
    intx,y,z;
    printf("Enter value of X");
    scanf("%d",&x);
    printf("Enter value of Y");
    scanf("%d",&y);
    printf("Enter value of Z");
    scanf("%d",&z);
    if(x>y){
        if(x>z){
            printf("The largest value is of x = %d",x);
        }
        else{
            printf("The largest value is of z =%d", z);
        }
    }
    else{
        if(y>z){
            printf("The largest value is of y= %d",y);
        }
        else{
            printf("The largest value is of z= %d",z);
        }
    }
}
```

Output

```
Enter value of X67
Enter value of Y45
Enter value of Z89
The largest value is of z =89
```

Nested Switch-Case Statement

Placing the simple switch case statements inside an existing case statementis called nested switch-case statement. Each block of nested switch case statement, logically performs the same as simple switch case statement. Following is the syntax of nested switch case statement.

```
Switch(controlling expression){
Label set 1:
        Statement 1;
         Break;
Label set 2:
        Statement 2;
Switch(controlling expression){
Label set 1:
        Statement 1;
        Break;
Label set 2:
        Statement 2;
        Break;
Default:
         Statement d;
}
        Break;
Default:
        Statement d;
}
```

Example Nested switch-case statement

Problem

Ayesha is interested in knowing the names of different countries. She wants a list of countries by just giving an starting and ending letter.

C-Implementation

```c
#include <stdio.h>
main()
{
char start,e;
printf("Please say starting letter of country");
scanf("%c",&start);
switch(start)
```

```c
{
case 'A':
case 'a':
   printf("Please say ending letter\n");
   scanf("\n%c",&e);
    switch(e)
    {
       case 'A':
       case 'a':
            printf("\n Alasca \n Albania \n Algeria");
            break;
       default:
            printf("\n No such country");
    }
   break;
case 'B':
case 'b':
   printf("Please say ending letter\n");
   scanf("\n%c",&e);
    switch(e)
    {
       case 'A':
       case 'a':
            printf("\n Bulgeria \n Bolivia \n Botswana");
             break;
       default:
            printf(" No such country");
```

```
        }
      break;
   default:
        printf("Please type correct letter");
   }
}
```
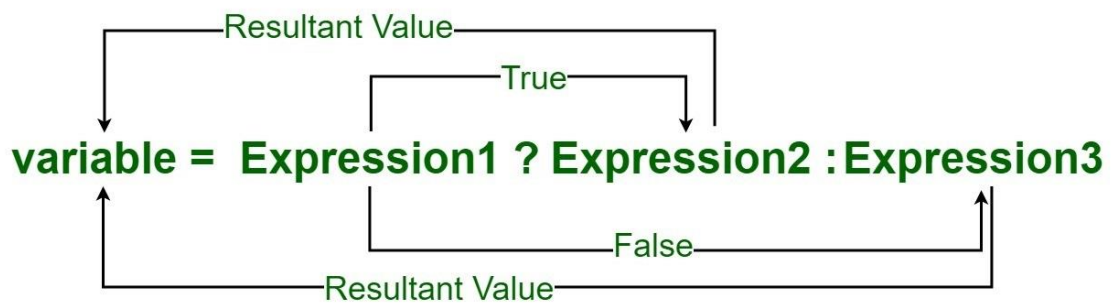
Output

```
C:\Users\hamza.ahmed.KHIFAST\Desktop\Untitled1.exe

Please say starting letter of countrya
Please say ending letter
a

 Alasca
 Albania
 Algeria
--------------------------------
Process exited after 1.783 seconds with return value 0
Press any key to continue . . .
```

Ternary Operator (?:) in C

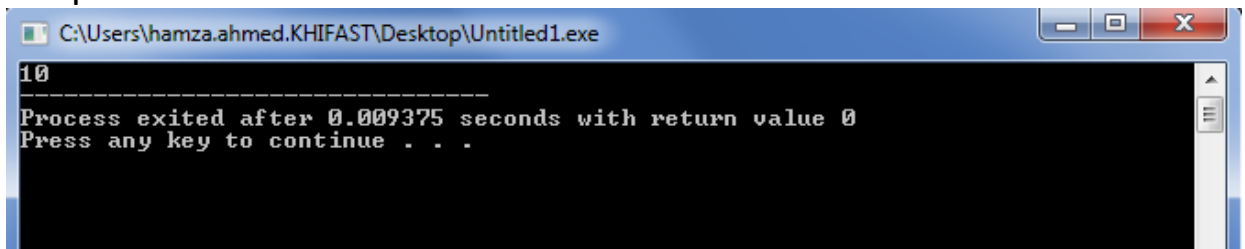### Conditional or Ternary Operator (?:) in C

variable = Expression1 ? Expression2 : Expression3

Resultant Value — True

False — Resultant Value

GG

```c
#include<stdio.h>

int main()
{
    int a = 10, b = 20, c;
    c = (a < b) ? a : b;
    printf("%d", c);
}
```

Output

```
C:\Users\hamza.ahmed.KHIFAST\Desktop\Untitled1.exe
10
------------------------------------
Process exited after 0.009375 seconds with return value 0
Press any key to continue . . .
```
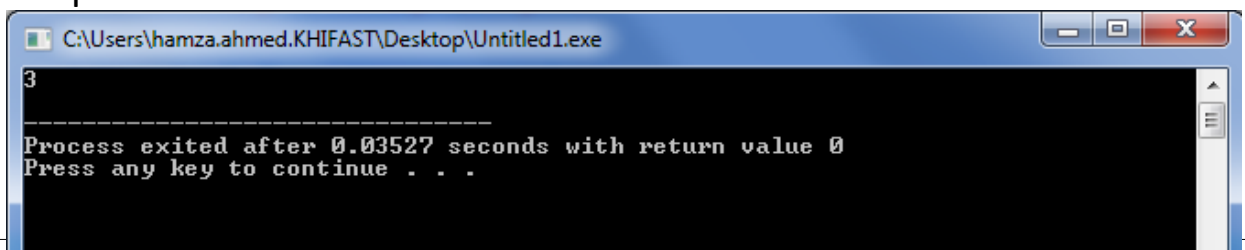
```c
#include<stdio.h>

int main()
{
    int a = 1, b = 2, ans;

    //Nested Ternary operator


    ans = (a == 1 ? (b == 2 ? 3 : 5) : 0);
    printf ("%d\n", ans);
}
```

Output

```
C:\Users\hamza.ahmed.KHIFAST\Desktop\Untitled1.exe
3

------------------------------------
Process exited after 0.03527 seconds with return value 0
Press any key to continue . . .
```