

# Lab # 05 Tasks

## Task 5: Nested Switch-Case for Student's Performance

Write a C program that implements the Nested Switch-Case for a School Grading System as described.

Program:

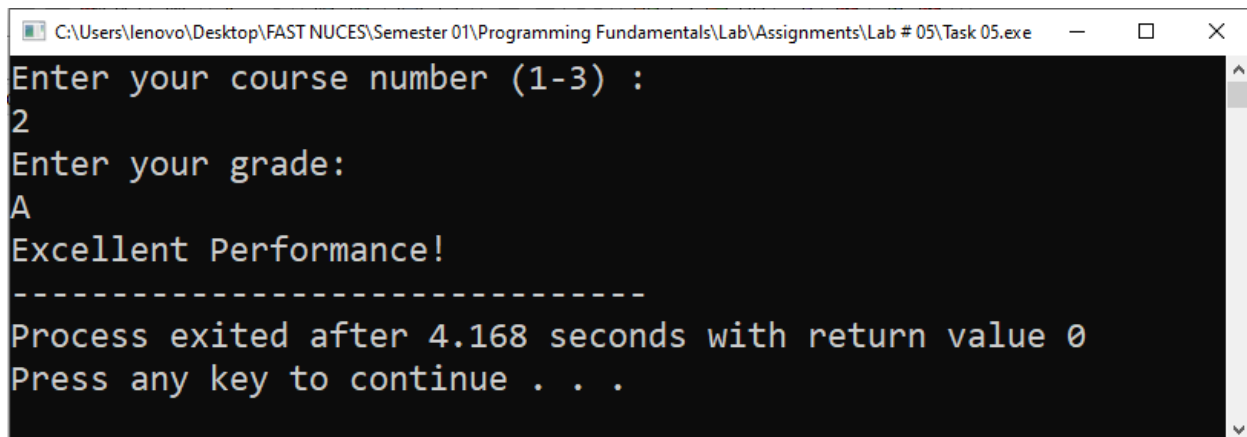
```
#include <stdio.h>

int main(void){
    int course_num;
    char grade;
    printf("Enter your course number (1-3) : \n");
    scanf("%d",&course_num);

    printf("Enter your grade: \n");
    scanf(" %c", &grade);

    switch(course_num){
        case 1:
        case 2:
        case 3:
            switch(grade){
                case 'A': printf("Excellent Performance!"); break;
                case 'B': printf("Good Performance, can be improved!"); break;
                case 'C': printf("Needs Improvement!"); break;
                case 'D': printf("Need to Work really hard!"); break;
                case 'F': printf("Focus on your studies!"); break;
                default: printf("Invalid Grade");
            }
            break;
        default: printf("Invalid course number");
    }
    return 0;
}
```

Output:



```
C:\Users\lenovo\Desktop\FAST NUCES\Semester 01\Programming Fundamentals\Lab\Assignments\Lab # 05\Task 05.exe
Enter your course number (1-3) :
2
Enter your grade:
A
Excellent Performance!
-----
Process exited after 4.168 seconds with return value 0
Press any key to continue . . .
```

### Task 6: Nested Ternary Operator for Maximum Value

Use nested ternary operators to find the maximum of three numbers.

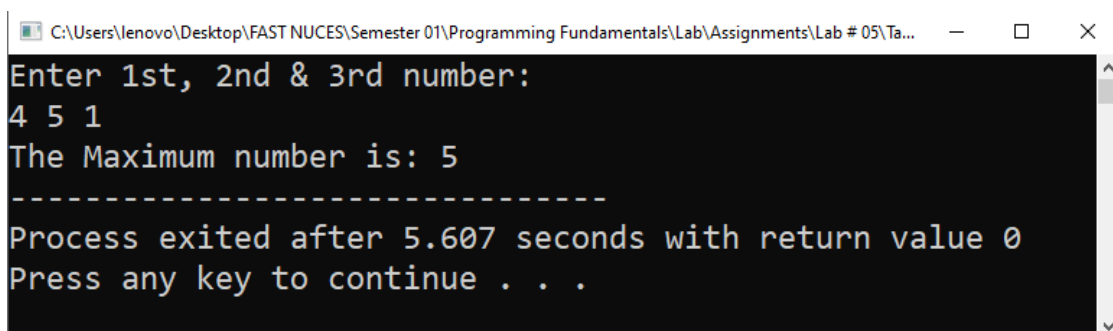
Program:

```
#include <stdio.h>

int main(void){
    int x,y,z,max;
    printf("Enter 1st, 2nd & 3rd number: \n");
    scanf("%d %d %d",&x,&y,&z);

    max = (x>y)?((x>z)?x:z):y;
    printf("The Maximum number is: %d", max);
    return 0;
}
```

Output:



```
C:\Users\lenovo\Desktop\FAST NUCES\Semester 01\Programming Fundamentals\Lab\Assignments\Lab # 05\Ta...
Enter 1st, 2nd & 3rd number:
4 5 1
The Maximum number is: 5
-----
Process exited after 5.607 seconds with return value 0
Press any key to continue . . .
```

### Task 7: Arithmetic Operators

Write a program that accepts two integers and performs various arithmetic operations on them.

Program:

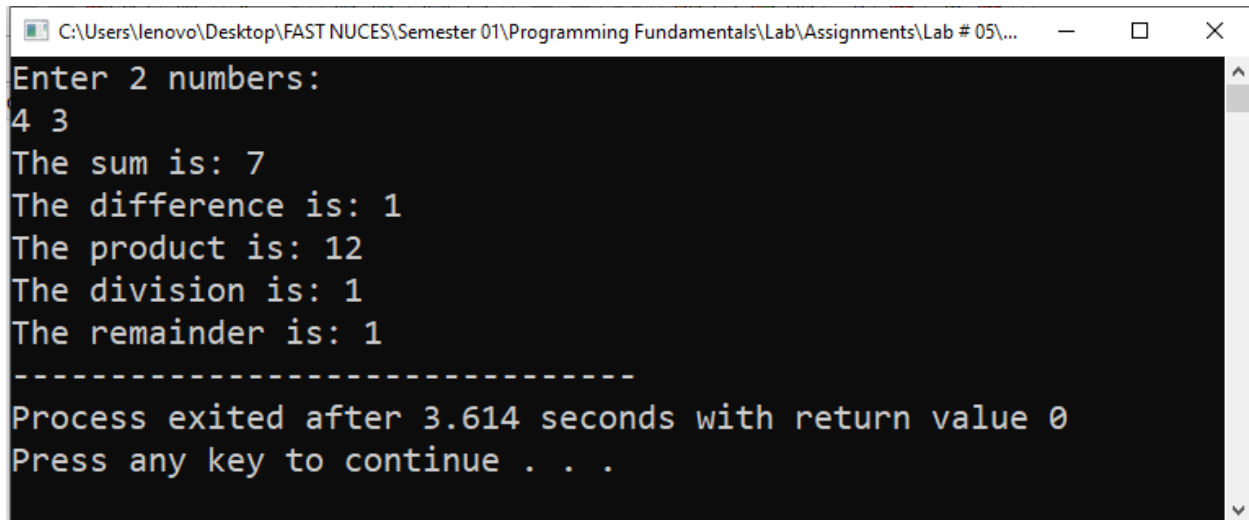
```
#include <stdio.h>

int main(void){
    int a,b;
    printf("Enter 2 numbers: \n");
    scanf("%d %d",&a,&b);

    printf("The sum is: %d\n", a+b);
    printf("The difference is: %d\n", a-b);
    printf("The product is: %d\n", a*b);
    printf("The division is: %d\n", a/b);
    printf("The remainder is: %d", a%b);

    return 0;
}
```

Output:



```
C:\Users\lenovo\Desktop\FAST NUCES\Semester 01\Programming Fundamentals\Lab\Assignments\Lab # 05\...
Enter 2 numbers:
4 3
The sum is: 7
The difference is: 1
The product is: 12
The division is: 1
The remainder is: 1
-----
Process exited after 3.614 seconds with return value 0
Press any key to continue . . .
```

## Task 8: Relational Operators

Demonstrate the use of relational operators by comparing two user-entered integers.

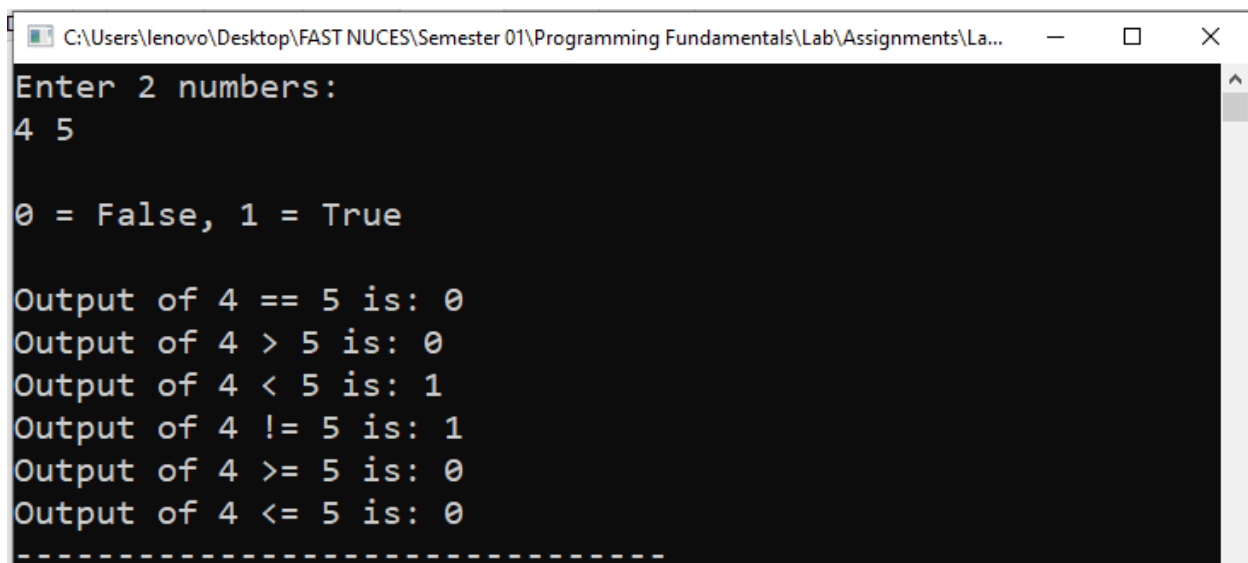
Program:

```
#include <stdio.h>

int main(void){
    int a,b;
    printf("Enter 2 numbers: \n");
    scanf("%d %d",&a,&b);

    printf("\n0 = False, 1 = True\n\n");
    printf("Output of %d == %d is: %d\n",a,b,a==b);
    printf("Output of %d > %d is: %d\n",a,b,a>b);
    printf("Output of %d < %d is: %d\n",a,b,a<b);
    printf("Output of %d != %d is: %d\n",a,b,a!=b);
    printf("Output of %d >= %d is: %d\n",a,b,a>=b);
    printf("Output of %d <= %d is: %d",a,b,a<=b);
    return 0;
}
```

Output:



```
C:\Users\lenovo\Desktop\FAST NUCES\Semester 01\Programming Fundamentals\Lab\Assignments\La...
Enter 2 numbers:
4 5

0 = False, 1 = True

Output of 4 == 5 is: 0
Output of 4 > 5 is: 0
Output of 4 < 5 is: 1
Output of 4 != 5 is: 1
Output of 4 >= 5 is: 0
Output of 4 <= 5 is: 0
-----
```

### Task 9: Use Bitwise Operators

Practice using bitwise operators by writing a program that performs bitwise operations on two integers.

Program:

```
#include <stdio.h>

int main(void){
    int a,b;
    printf("Enter 2 numbers: \n");
    scanf("%d %d",&a,&b);

    printf("Output of %d & %d is: %d\n",a,b,a&b);
    printf("Output of %d | %d is: %d\n",a,b,a|b);
    printf("Output of %d ^ %d is: %d\n",a,b,a^b);
    printf("Output of ~%d is: %d\n",a,~a);
    printf("Output of %d<<1 is: %d\n",a,a<<1);
    printf("Output of %d>>1 is: %d",b,b>>1);
    return 0;
}
```

Output:

```
C:\Users\lenovo\Desktop\FAST NUCES\Semester 01\Programming Fundamentals\Lab\Assi...
Enter 2 numbers:
6 8
Output of 6 & 8 is: 0
Output of 6 | 8 is: 14
Output of 6 ^ 8 is: 14
Output of ~6 is: -7
Output of 6<<1 is: 12
Output of 8>>1 is: 4
-----
```

**Task 10: Nested If-Else for Largest of Three Numbers**

Practice using nested if-else statements by writing a program that finds the largest of three user-entered numbers.

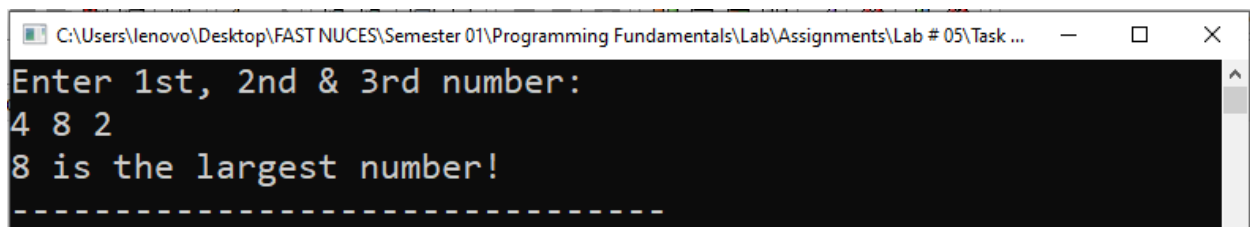
Program:

```
#include <stdio.h>

int main(void){
    int x,y,z,max;
    printf("Enter 1st, 2nd & 3rd number: \n");
    scanf("%d %d %d",&x,&y,&z);

    if(x>y){
        if(x>z){
            printf("%d is the largest number!",x);
        }
        else{
            printf("%d is the largest number!",z);
        }
    }
    else{
        printf("%d is the largest number!",y);
    }
    return 0;
}
```

Output:



```
C:\Users\lenovo\Desktop\FAST NUCES\Semester 01\Programming Fundamentals\Lab\Assignments\Lab # 05\Task ...
Enter 1st, 2nd & 3rd number:
4 8 2
8 is the largest number!
-----
```