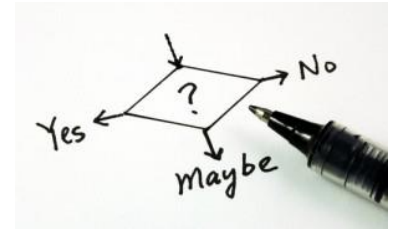


Assignment #2

Practice with Complex Conditions



In this section you will practice solving problems with multiple conditions. You will also be introduced to the “**case switch**” statement.

Exercise 2.1 (Type this one in)

Write a C program to check whether an alphabet is a vowel or consonant.

Sample Input: A

Sample Output: A is a vowel!

Sample Solution:

```
#include <stdio.h>
void main()
{
    char sing_ch;

    printf("Input any alphabet : ");
    scanf("%c", &sing_ch);

    if(sing_ch=='a' || sing_ch=='e' || sing_ch=='i' || sing_ch=='o' || sing_ch=='u'
    || sing_ch=='A' || sing_ch=='E' || sing_ch=='I' || sing_ch=='O'
    || sing_ch=='U')
    {
        printf("The alphabet is a vowel.\n");
    }
    else if((sing_ch>='a' && sing_ch<='z') || (sing_ch>='A' && sing_ch<='Z'))
    {
        printf("The alphabet is a consonant.\n");
    }
    else
    {
        printf("The character is not in the alphabet.\n");
    }
}
```

Exercise 2.2 (Type this one in)

Write a program to calculate **profit** or **loss** on a business transaction. Imagine you are selling second hand skis on the internet. If you input the cost you payed for your skis and how much you sold them for, your program will determine if the transaction was a **profit** or **loss** and how much your profit or loss was.

Sample Input:

Cost of Skies: \$120

You sold your skis for: \$160

Sample Output:

Yes! You made a PROFIT of \$40!

Sample Solution:

C Code:

```
#include <stdio.h>
void main()
{
    int cprice,sprice, plamt; //cprice is Cost Price and sprice is Selling Price,
    plamt denotes total profit/loss

    printf("Input Cost Price: ");
    scanf("%d", &cprice);
    printf("Input Selling Price: ");
    scanf("%d", &sprice);

    if(sprice>cprice) //calculate profit
    {
        plamt = sprice-cprice;
        printf("\nYou can booked your profit amount : %d\n", plamt);
    }
    else if(cprice>sprice) //calculate loss
    {
        plamt = cprice-sprice;
        printf("\nYou got a loss of amount : %d\n", plamt);
    }
    else //No Profit No Loss
    {
        printf("\nYou are running in no profit no loss condition.\n");
    }
}
```

Exercise 2.3 (Try this one on your own....then Check)

Create a program that asked the user for 2 numbers. The program will then compare the number values and output which is larger or if they are equal.

Sample input:

Input two integers: 67, 24

Sample output:

67 is greater than 24

```
// Program to relate two integers using =, > or <

#include <stdio.h>
int main()
{
    int number1, number2;
    printf("Enter two integers: ");
    scanf("%d %d", &number1, &number2);

    if(number1 == number2)
    {
        printf("Result: %d = %d", number1, number2);
    }

    else if (number1 > number2)
    {
        printf("Result: %d > %d", number1, number2);
    }

    else
    {
        printf("Result: %d < %d", number1, number2);
    }

    return 0;
}
```

The "switch case" statement

Sometimes **multiple** conditionals can be replaced with a single "switch case" statement. This saves the programmer from writing **multiple** "if" statements or **multiple conditions** within an "if" statement.

For example: (**cut and paste** this into onlinedb)

The following code is a calculator that asks for a 2 numbers and an operation. It will output the correct calculations. Notice the floats being used and how to display them.

```
# include <stdio.h>
int main()
{
    char op;
    float Num1,Num2;

    printf("Enter the operation (+, -, *, /): ");
    scanf("%c",&op);

    printf("Enter two numbers: ");
    scanf("%f %f",&Num1,&Num2);

    switch(op)
    {
        case '+':

            printf("%.1f + %.1f = %.1f",Num1, Num2, Num1+Num2);
            break;

        case '-':

            printf("%.1f - %.1f = %.1f", Num1, Num2, Num1-Num2);
            break;

        case '*':

            printf("%.11f * %.11f = %.11f", Num1, Num2, Num1*Num2);
            break;

        case '/':

            printf("%.1f / %.1f = %.1f", Num1, Num2, Num1/Num2);
            break;

        // operator is doesn't match any case constant (+, -, *, /)
        default:

            printf("Error! operator is not correct");
    }
    return 0;
}
```

Exercise 2.4 (try then check)

Write a program that accepts a grade and then display the equivalent description:

- A - "Excellent you're a champ! Move on to U of T, UBC, or Uvic"
- B - "hmmmmm....Sauder School of business won't let you in"
- C - "Yikes. Not good"
- D - "Sproat Shaw College might accept you"
- F - "You've been suspended"

Sample Solution:

```
#include <stdio.h>
#include <ctype.h>
#include <string.h>

void main()
{
    char notes[15];
    char grd;

    printf("Input the grade :");
    scanf("%c", &grd);

    grd = toupper(grd);
    switch(grd)
    {
        case 'A':
            strcpy(notes, " Excellent");
            break;
        case 'B':
            strcpy(notes, " Very Good");
            break;
        case 'C':
            strcpy(notes, " Good ");
            break;
        case 'D':
            strcpy(notes, " Average");
            break;
        case 'F':
            strcpy(notes, " Fails");
            break;
        default :
            strcpy(notes, "Invalid Grade Found. \n");
            break;
    }
    printf(" : %s\n", notes);
}
```

Exercise 2.5 (Try on your own, then check)

Days of the week. Write a program to read a number (1-7) and display the day of the week as a word.

Sample Input: 2

Sample Output: Tuesday!

Sample Solution:

C Code:

```
#include <stdio.h>
void main()
{
    int dayno;
    printf("Input Day No : ");
    scanf("%d",&dayno);
    switch(dayno)
    {
        case 1:
            printf("Monday \n");
            break;
        case 2:
            printf("Tuesday \n");
            break;
        case 3:
            printf("Wednesday \n");
            break;
        case 4:
            printf("Thursday \n");
            break;
        case 5:
            printf("Friday \n");
            break;
        case 6:
            printf("Saturday \n");
            break;
        case 7:
            printf("Sunday \n");
            break;
        default:
            printf("Invalid day number. \nPlease try again ....\n");
            break;
    }
}
```

Exercise 2.6 (you try then check)

Create a simple menu. Write a program that can compute the **AREA** of various geometrical shapes.

Sample input:

Select your shape:

```
Input 1 for area of circle
Input 2 for area of rectangle
Input 3 for area of triangle
1
Input radius of the circle
2
```

Sample output:

```
The radius of your circle is: 12.566 m2
```

Sample Solution:

C Code:

```
#include <stdio.h>
void main ()
{
    int choice,r,l,w,b,h;
    float area;
    printf("Input 1 for area of circle\n");
    printf("Input 2 for area of rectangle\n");
    printf("Input 3 for area of triangle\n");
    printf("Input your choice : ");
    scanf("%d",&choice);
    switch(choice)
    {
        case 1:
            printf("Input radius of the circle : ");
            scanf("%d",&r);
            area=3.14*r*r;
            break;
        case 2:
            printf("Input length and width of the rectangle : ");
            scanf("%d%d",&l,&w);
            area=l*w;
            break;
        case 3:
            printf("Input the base and hight of the triangle :");
            scanf("%d%d",&b,&h);
            area=.5*b*h;
            break;
    }
    printf("The area is : %f\n",area);
}
```