Switch Case

This is a multiple or multi-way branching decision making statement. When we use nested if-else statement to check more than one conditions then the complexity of a program increases in case of a lot of conditions. So to overcome this problem, C provides 'switch case'. Switch case checks the value of a expression against a case values, if condition matches the case values then the control is transferred to that point.

Syntax: `switch (expression) {
    case expr1:
        statements;
    break;
    case expr2:
        statements;
    break;
    ...
    case expr N:
        statements;
    break;
    default:
        statements;
    break;
}

In this syntax, `switch`, `case`, `break` are keywords.
`expr1`, `expr2` are known as 'case labels.'

Break statement causes an exit from switch statement.
Default case is optional case. When neither any match found, it executes

Example 1: Program to check which digit number is given by the user.

```c
#include<stdio.h>
#include<conio.h>
main()
{
    int x,i;
    clrscr();
    printf("enter any digit no.");
    scanf("%d",&x);
    for(i=0;x!=0;x/=10)
        i++;
    switch(i)
    {
    case 1:        printf("One Digit No.");
                    break;
    case 2:        printf("Two Digit No.");
                    break;
    case 3:        printf("Three Digit No.");
                    break;
    case 4:        printf("Four Digit No.");
                    break;
    case 5:        printf("Five Digit No.");
                    break;
    default:        printf("Wrong Input");
    }
    getch();
}
```

Note: The `break` statement is needed so that once a case has been executed, it will skip all the other cases and go outside the `switch` statement.
If the `break` statement is omitted, the execution will be carried out to the next alternatives until the next `break` statement is found.
Example 2: Write a C program that displays the recommended actions depending on the color of a traffic light using the switch statement.

```c
#include<stdio.h>
#include<conio.h>

void main ()
{
    char colour;
    printf("Enter the colour of the light (R,G,Y,A): ");
    scanf("%c", &colour);

    switch (colour)
    {
    case 'R':
        case 'r':
            printf("STOP! 
");
        break;
    case 'Y':
        case 'y':
            printf("CAUTION! 
");
        break;
    case 'G':
        case 'g':
            printf("GO! 
");
        break;
    default: printf("The colour is not valid.
");
        break;
    }
    getch();
}
```

Example 3: Write a menu driven program using switch case which has following option:

1. Addition of numbers
2. Multiplication of numbers
3. Subtraction of numbers
4. Division of numbers
5. Modulus of numbers

```c
#include<stdio.h>
#include<conio.h>

void main()
{
    int a,b,ch;
    clrscr();
    printf("Enter any two number
");
    scanf("%d%d",&a,&b);
    printf("Enter your choice
1=add
2=multi
3=sub
4=div
5=mod");
    scanf("%d",&ch);
    switch(ch)
    {
    case 1: printf("Addition of number=%d",a+b);
        break;
    case 2: printf("Multiplication of number=%d",a*b);
        break;
    case 3: printf("Subtraction of number=%d",a-b);
        break;
    case 4: printf("Division of number=%d",a/b);
        break;
    case 5: printf("Modulus of number=%d",a%b);
        break;
    default:printf("Wrong input ");
    }
    getch();
}
```

Try yourself:
Q.1. Write a program with the help of switch case to input any number between 1 to 7 and print the appropriate day name. (Assume 1 is Monday).

Q.2. Write a program to input any 3 digit number and any one from the following option:
1. Sum of Digit
2. Multiplication of digit
3. Reverse of Digit