

# Multicondition if Statements and switch Statements

```
if ((day == 1) || (day == 5))          /* Monday, Friday */
{
    printf ("Work at home today\n");
}
else if ((day == 2) || (day == 4))     /* Tuesday, Thursday */
{
    printf ("CSci 49, 12:45 AM - 2:00 PM\n");
    printf ("CSci 133, 2:20 - 3:35 PM\n");
    printf ("Office hours, 4:30 - 6:00 PM\n");
}
else if (day == 3)                     /* Wednesday */
{
    printf ("Office hours, 2 - 5:30 PM\n");
}
else if ((day == 6) || (day == 7))     /* Saturday, Sunday */
{
    printf ("Have a nice weekend\n");
}
else                                    /* none of the above */
{
    printf ("Out of range input; try again")
}
}
```

Important fact: in this algorithm, the various conditions are *mutually exclusive*. Only one can logically be true for any given input value.

In situations like this -- a mutually exclusive set of conditions that can be expressed by values of a single variable or simple expression -- the switch statement may be appropriate and is simpler to write.

# Switch Statements

```
switch(day)
{
  case 1:
  case 5:                                     /* Monday, Friday */
    printf ("Work at home today\n");
    break;   /* jump to bottom of switch statement

  case 2:
  case 4:                                     /* Tuesday, Thursday */
    printf ("CSci 49, 12:45 AM - 2:00 PM\n");
    printf ("CSci 133, 2:20 - 3:35 PM\n");
    printf ("Office hours, 4:30 - 6:00 PM\n");
    break;

  case 3:                                     /* Wednesday */
    printf ("Office hours, 2 - 5:30 PM\n");
    break;

  case 6:
  case 7:                                     /* Saturday, Sunday */
    printf ("Have a nice weekend\n");
    break;

  default:                                   /* anything else */
    printf("Bad input\n");
}
```

# Use Constants, Not "Magic Numbers"

```
const int MON = 1, TUE = 2, WED = 3, THU = 4;
const int FRI = 5, SAT = 6, SUN = 7;
...
switch(day)
{
  case MON:
  case FRI:                                     /* Monday, Friday */
    printf ("Work at home today\n");
    break;   /* jump to bottom of switch statement

  case TUE:
  case THU:                                     /* Tuesday, Thursday */
    printf ("CSci 49, 12:45 AM - 2:00 PM\n");
    printf ("CSci 133, 2:20 - 3:35 PM\n");
    printf ("Office hours, 4:30 - 6:00 PM\n");
    break;

  case WED:                                     /* Wednesday */
    printf ("Office hours, 2 - 5:30 PM\n");
    break;

  case SAT:
  case SUN:                                     /* Saturday, Sunday */
    printf ("Have a nice weekend\n");
    break;

  default:                                     /* anything else */
    printf("Bad input\n");
}
```

```

/*-----
ShowSwitch1.c
Illustrate switch statemen
Author: Michael Feldman, The George Washington University
Last Modified: March 2006
-----*/
#include <stdio.h>
int main()
{
    int Num;
    int resultCode;

    printf("Please enter an integer value > ");
    resultCode = scanf ("%d", &Num);
    switch(Num)
    {
        case 1:
            printf("I'm in case 1.\n");
            break;
        case 2:
            printf("I'm in case 2.\n");
            break;
        case 3:
            printf("I'm in case 3.\n");
            break;
        default:
            printf("I'm in default case.\n");
    }

    return 0;
}

```

```

/*-----
ShowSwitch2.c
Illustrate switch statement
Author: Michael Feldman, The George Washington University
Last Modified: March 2006
-----*/
#include <stdio.h>
int main()
{
    char userInput;
    int resultCode;

    printf("Please enter a character value > ");
    resultCode = scanf ("%c", &userInput);
    switch(userInput)
    {
        case 'a':
            printf("I'm in case a.\n");
            break;
        case 'x':
            printf("I'm in case x.\n");
            break;
        case 'f':
            printf("I'm in case f.\n");
            break;
        default:
            printf("I'm in default case.\n");
    }

    return 0;
}

```

```

/*-----
ShowSwitch3.c
Illustrate switch statement
Author: Michael Feldman, The George Washington University
Last Modified: March 2006
-----*/
#include <stdio.h>
int main()
{
    int i;

    for (i=0; i <= 9; ++i)
    {
        switch(i)
        {
            case 1:      /* NOTE - this is just a null statement! */
            case 2:
            case 9:
            case 4:
            case 3:
                printf("%d is either 1,2,3,4 or 9\n",i);
                break;
            case 5:
                printf("%d is of course 5\n",i);
                break;
            case 7:
            case 8:
                printf("%d is 7 or 8\n",i);
                break;
            default:
                printf("%d isn't 1,2,3,4,5,7,8, or 9\n",i);
        }
        printf("-----\n");
    }

    return 0;
}

```