Decision Making Statements

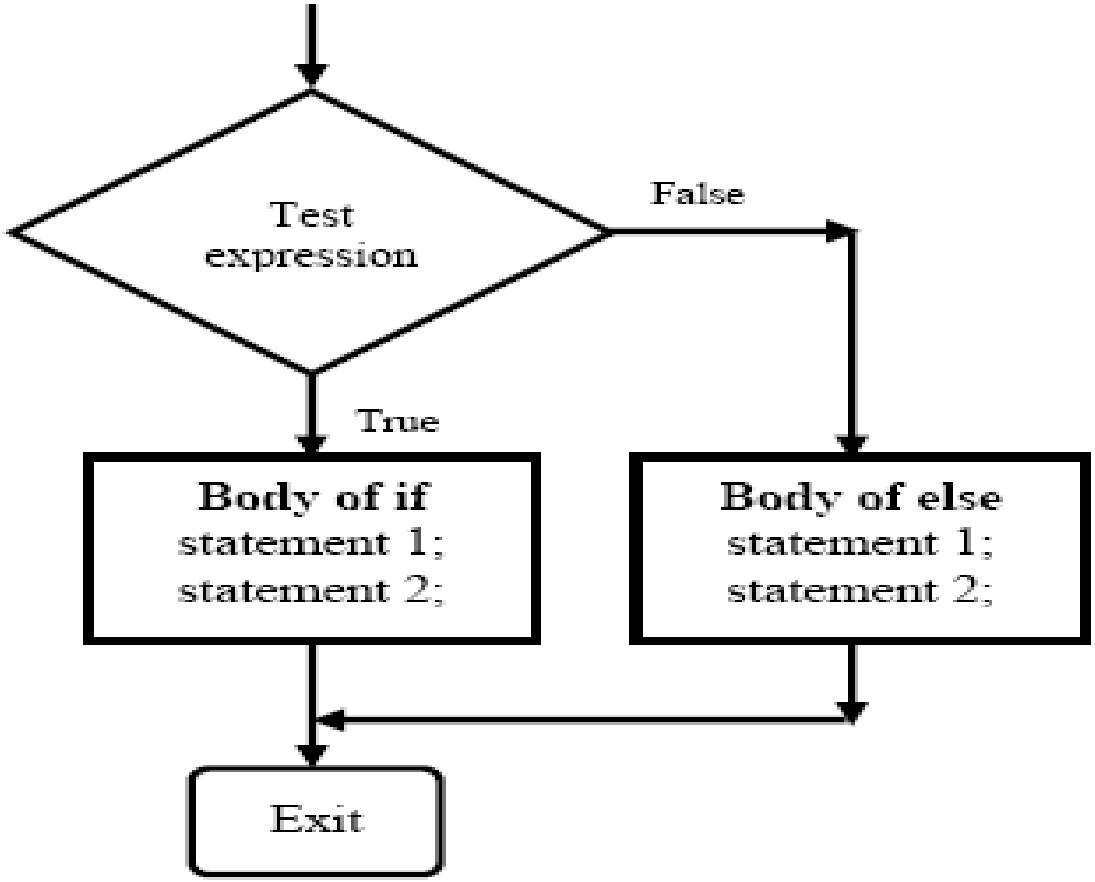
if statement

- The if else statement executes one or more commands when a condition is true.
- If condition is false then those commands are ignored and are not executed.

if statement

```
#include<iostream.h>
#include<conio.h>
void main(void)
{    clrscr();
       int a;
       cout<<"Enter value";
       cin>>a;
       if(a>=10)
       {
           cout<<“BSCS";
       }
       else
       {
           cout<<“MCS";
       }
       getch();
}
```

Operation of if else statement



Nested if statement

```
#include<iostream.h>
#include<conio.h>
void main(void)
{     clrscr();
        int a, b, c;
        cout<<"Enter values for A, B and C ";
        cin>>a>>b>>c;
        if(a==b)
        {
             if(b==c)
             {
                cout<<"A. B and C are Equal";
             }
             else
             {
                cout<<"B and C are not Equal";
             }
        }
        else
        {
        cout<<"A and B are not Equal";
        }
        getch();
}
```

Output

Enter values for A, B and C 5 5 8
B and C are not Equal

Enter values for A, B and C 5 3 3
A and B are not Equal

Enter values for A, B and C 4 4 4
A. B and C are Equal

Enter values for A, B and C 8 6 8
A and B are not Equal

Counting words and characters with different technique

```
#include<iostream.h>
#include<conio.h>
void main(void)
{
      int chcount=0;
      int wdcount=1;
      char ch;
      clrscr();
      while((ch=getche()) !='\r')
      {     if(ch==' ')
               wdcount++;
            else
               chcount++;
      }
      cout<<"\nWords = "<<wdcount;
      cout<<"\nCharacters = "<<chcount;
      getch();
}
```

Output

```
hello how are you
Words = 4
Characters = 14
```

The switch statement

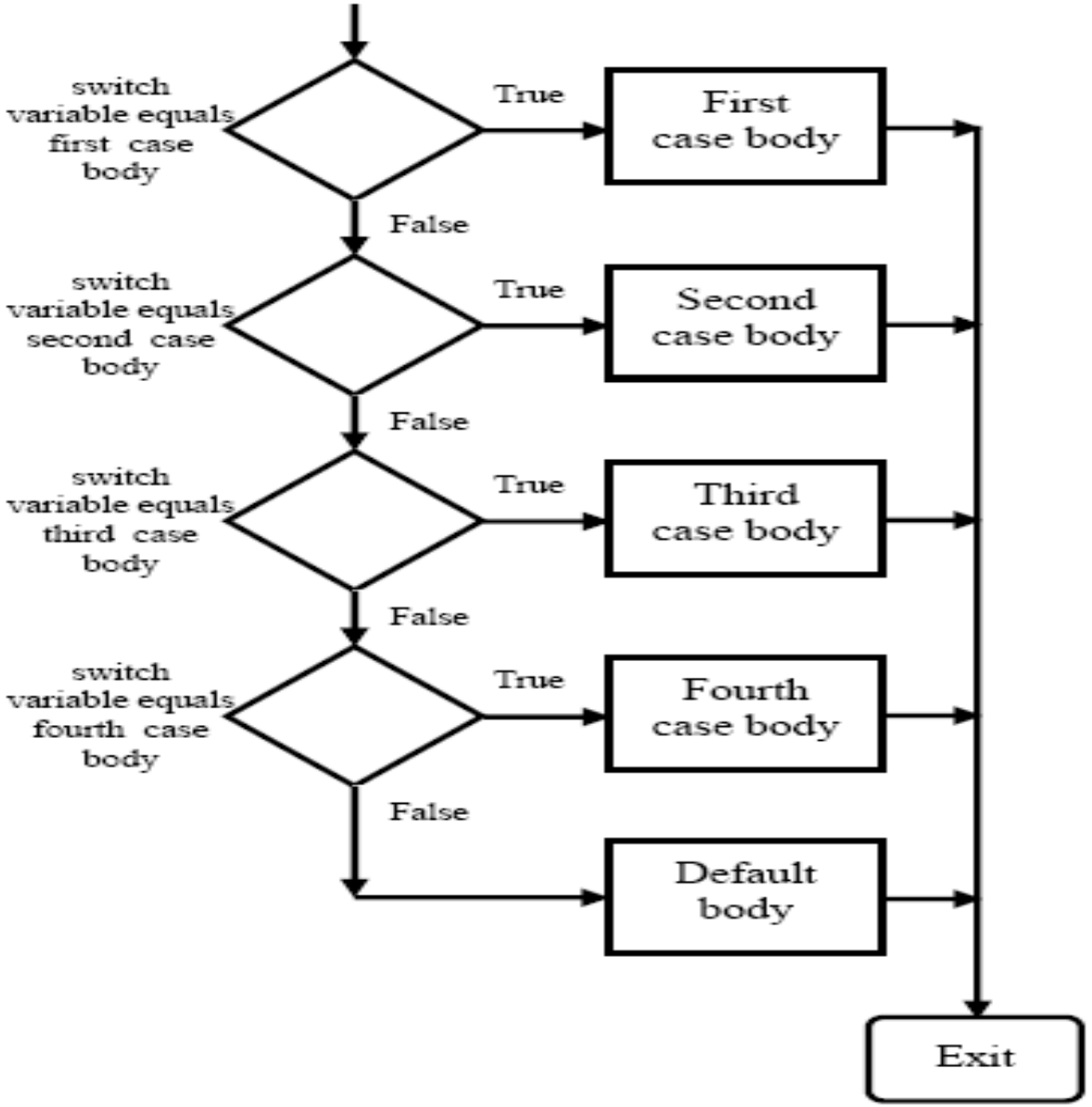
- The switch statement is similar to the if else or else if construct but is more flexible.
- If decision tree is large, and all the decisions depend on the value of the same variable, then it is better to use switch statement instead of series of if else or else if statements.

The switch statement

```
#include<iostream.h>
#include<conio.h>
void main(void)
{ clrscr();
    char ch=‘b’;
    cout<<“Enter character”;
    cin>>ch;
    switch(ch)
    {
        case ‘b':
                cout<<“BSCS”<<endl;
                break;
        case ‘m':
                cout<<“MCS”<<endl;
                break;
        default:
                cout<<“BSCS and MCS";
    }
getch();
}
```

The break statement

- The break keyword causes the entire switch statement to exit. Control goes to the first statement following the end of the switch statement.
- If break statement is not used then the control passes down to the next case statement and the statements that we do not want to execute, starts executing.
- If the value of the switch variable doesn’t match any of the case constants then control passes to the end of the switch without doing anything



Operation of switch statement

Defining Label and use of switch, break and goto statements

- Example

```
#include<iostream.h>
#include<conio.h>
void main(void)  // main start
{ clrscr();
int a, b;
char ch;
cout<<"Enter 1st value ";
cin>>a;
cout<<"Enter 2nd value ";
cin>>b;
again:
cout<<"+, -, x, / ";
ch=getche();
cout<<endl;
switch(ch)
  {
    case '+':
    cout<<a<<" + "<<b<<" = "<<a+b<<endl;
    break;
    case '-':
    cout<<a<<" - "<<b<<" = "<<a-b<<endl;
    break;
    case 'x':
    cout<<a<<" x "<<b<<" = "<<a*b<<endl;
    break;
    case '/':
    cout<<a<<" / "<<b<<" = "<<a/b<<endl;
    break;
    default:
    cout<<"Wrong Choice\n";
    goto again;
  }
getch();
} // main end
```

EXAMPLE

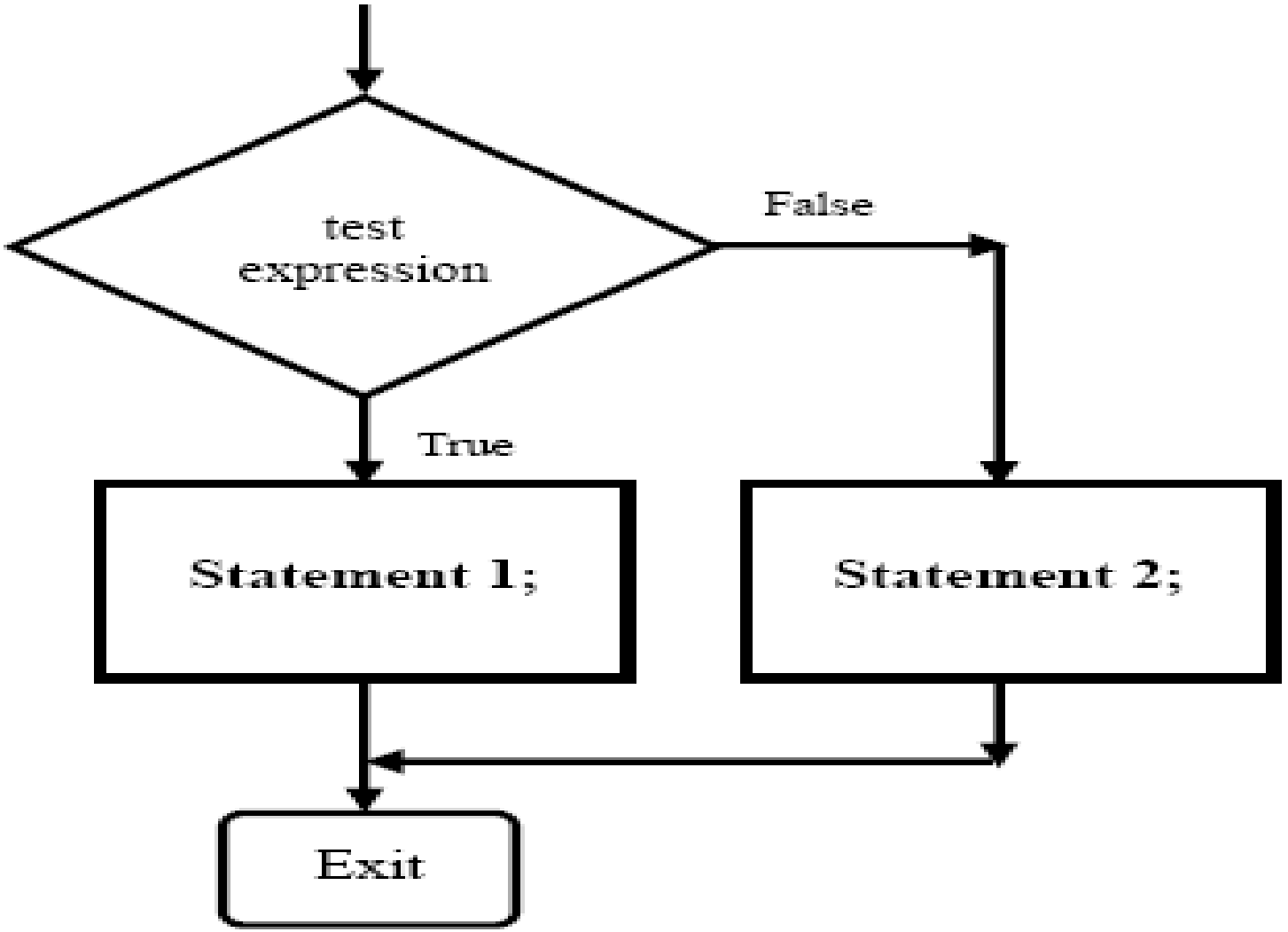
Using multiple cases in switch statement

```
#include<iostream.h>
#include<conio.h>
void main(void)
{ clrscr();
int a, b;
char ch;
cout<<"Enter 1st value ";
cin>>a;
cout<<"Enter 2nd value ";
cin>>b;
cout<<"1. Add\n";
cout<<"2. Subtract\n";
cout<<"3. Multiply\n";
cout<<"4. Divide\n";
again:
cout<<"Enter your choice (1-4) ";
ch=getche();
cout<<endl;
switch(ch)
   {
      case '1':
      case 'A':
      case 'a':
            cout<<a<<" + "<<b<<" = "<<a+b<<endl;
            break;
      case '2':
      case 'S':
      case 's':
            cout<<a<<" - "<<b<<" = "<<a-b<<endl;
            break;
      case '3':
      case 'M':
      case 'm':
            cout<<a<<" x "<<b<<" = "<<a*b<<endl;
            break;
      case '4':
      case 'D':
      case 'd':
            cout<<a<<" / "<<b<<" = "<<a/b<<endl;
            break;
      default:
            cout<<"Wrong Choice\n";
            goto again;
   }
getch();
}
```

The Conditional Operator

- There is a compressed way of expressing the if else statement and is called the conditional operator.

```
#include<iostream.h>
#include<conio.h>
void main(void)
    {
    clrscr();
    int a, b;
    cout<<"Enter 1st value ";cin>>a;
    cout<<"Enter 2nd value ";cin>>b;
    (a > b) ? cout<<"1st value is greater" : cout<<"2nd value is greater";
    getch();
}
```



Operation of conditional operator