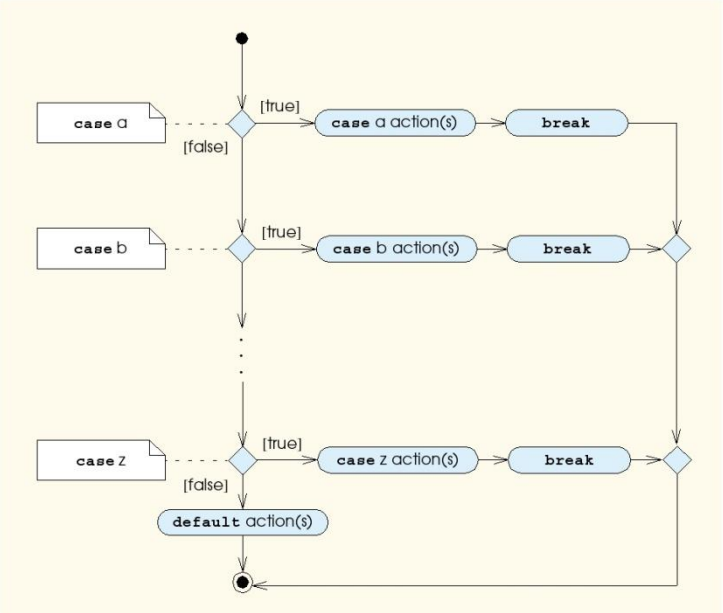
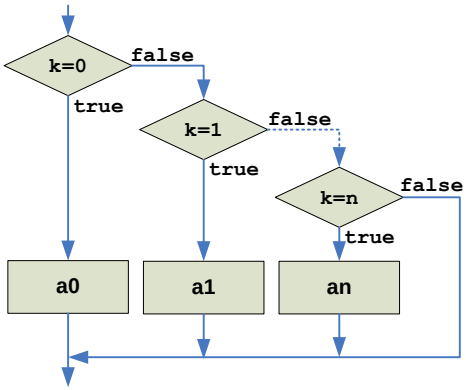


The C++ **SWITCH** statement may be used to select one of several alternatives. The **SWITCH** statement has the general form:

```
switch (k)
{
case 0: a0;
        break;
case 1: a1;
        break;
.................
case n: an;
}
```



Note: The keyword **break;** in a switch is very important! If the break is omitted following a statement sequence, then execution will continue, or fall through to the next statement(s). Ordinarily this is undesirable and an error.

switch example	if-else equivalent

switch (x) {
  case 1:
  cout << "x is 1";
  break;
  case 2:
  cout << "x is 2";
  break;
  default:
  cout << "value of x unknown";
  }
	if (x == 1) {
	  cout << "x is 1";
	  }
	else if (x == 2) {
	  cout << "x is 2";
	  }
	else {
	  cout << "value of x unknown";
	  }

1. If one entered number is 1,2 or 3 or NOT

```
#include <iostream>
using namespace std;
```

```
int main()
{
int x;
cout<<"Enter x: ";
cin>>x;

switch (x) {
  case 1:
  case 2:
  case 3:
    cout << "x is 1, 2 or 3";
    break;
  default:
    cout << "x is not 1, 2 nor 3";
  }


cin.get(); cin.get();
return 0;
}
```

2. If one entered data is digit, consonant or vowel

```
# include <iostream>
using namespace std;
int main()
{
char sign;
char yesno='d';
int smg=0;
int sg=0;
start:
cout<<"\nEnter char from the type char:";
cin>>sign;
switch (sign)
{
	case ('a'):
	case ('e'):
	case ('i'):
	case ('o'):
	case ('u'):
		cout<<"\nThe sign "<<sign<<" is vowel"<<endl;
		smg++;
		break;

	case ('0'):
	case ('1'):
	case ('2'):
	case ('3'):
	case ('4'):
	case ('5'):
	case ('6'):
	case ('7'):
	case ('8'):
	case ('9'):
		cout<<"\nThe sign is number\n";
			break;

	default:
```

```
            cout<<"\n The sign "<<sign<<" is consonant"<<endl;
            sg++;
            break;
}
cout<<"try again"<<endl<<"y/n choose\n";
cin>>yesno;
if (yesno=='y') goto start;
cout<<"/nThe number of entered vowels is "<<smg<<" , and the number of consonant
is "<<sg<<endl;

cin.get(); cin.get();
return 0;
}
```

3. Entering numbers from 1 to 15, checking and counting if they are odd or even

```
#include <iostream>
using namespace std;
int main()
{
int i, n, broj, b_parni=0,b_neparni=0;
  cout<<" Vnesi priroden broj n:";
  cin>>n;

for(i=1; i<=n; i++)
 { cout<<"\n Vnesi go brojot od intervalot [1,15 ] :";
cin>>broj;
switch (broj)
{ case 1:
case  3:
case  5:
case  7:
case  9:
case  11:
case  13:
case  15:b_neparni++;
               break;
  case 2:
  case 4:
  case 6:
  case 8:
  case 10:
  case 12:
 case 14:b_parni++;
          break;
default: cout<<" \nBrojot ne e vo baraniot interval ";
      break;}
    }
  cout<<" parni broevi se "<<b_parni<<" i neparni broevi se "<<b_neparni;

cin.get(); cin.get();
return 0;
}
```

4. Entering numbers from 1 to 10, checking and counting how much of them are/aren't in the interval

```
# include <iostream>
using namespace std;
//vnesot se kontrolira so brojot n na prirodni broevi
int main()
```

```
{
int i, n, broj,  br_vo=0, br_nevo=0;
  cout<<" Vnesi priroden broj n:";
  cin>>n;
i=1;
while(i<=n)
 { cout<<"\n Vnesi go brojot od intervalot [1,10 ] :";
cin>>broj;
switch (broj)
{ case 1:
case  2:
case  3:
case  4:
case  5:
case  6:
case  7:
case  8:
case 9:

  case 10:
          cout<<"\n brojot e vo baraniot interval";
                              br_vo++;
                              i++;
          break;
default: cout<<" \nBrojot ne e vo baraniot interval ";
        br_nevo++;
                    i++;
        break;}//end switch
   }//end for
cout<<" \n broevi vo baraniot interval se "<<br_vo<<" i koi ne se vo baraniot interval e "<<br_nevo;

cin.get(); cin.get();
return 0;
}
```

5. Here is another example of using **switch**:

```
#include<iostream>
using namespace std;
int main()
{
int size;
cout<<"Enter one integer";
cin>>size;
       switch (size)
          {
               case 6:
               case 7:
               case 8:
               case 9:
               case 101:
                   cout << "big";
                   break;
               case 1:
               case 2:
               case 3:
                   cout << "small";
                   break;
               case 4:
               case 5:
                   cout << "medium";
                   break;
```

```
            default:
                cout << "Error";
                break;
        }
        cout << endl;

cin.get();
cin.get();
return 0;
      }



#include <iostream>
using namespace std;

int main(){
      int month,daysInMonth=0;
      cout<<"Enter number of month";
      cin>>month;
switch (month)
{ // 30 days hath Sept., Apr., June, and Nov.
case 9:
case 4:
case 6:
case 11:
daysInMonth = 30;
break;
// all the rest have 31
case 1:
case 3:
case 5:
case 7:
case 8:
case 10:
case 12:
daysInMonth = 31;
break;
// except February
case 2:
daysInMonth = 28;
break;
default:
cout << "Incorrect value for Month." << endl;
} // end switch

cout<<"This month has "<< daysInMonth <<" days";
cin.get();
cin.get();
return 0;
}

Presmetuvanje na vrednosta na funkcijata y preku 4 razlicni izrazi
#include <iostream>
using namespace std;
int main()
{
      int i;
      double y;
      cout<<"Enter i=0, 1, 2 or 3:";
      cin>>i;

            switch(i)
```

```
            {
                  case 0:     y=3*i+2;
                              break;
                  case 1:     y=i+6;
                              break;
                  case 2:     y=-5;
                              break;
                  case 3:     y=2*i-9;
            }
            cout << "i="
                       << i
                       <<" y="
                       << y
                       << "\n";

cin.get();
cin.get();
return 0;
}
```

Presmetuvanje na vrednosta na funkcijata y preku 4 razlicni izrazi

```
#include <iostream>
#include <cmath>
using namespace std;
int main()
{
      double x;
      int i;
      double y;
      cout<<"Enter i=5, 6, 7 or 8:";
      cin>>i;

x=2*i;
                        switch(i)
                        {
                              case 5:     y=sin(x);
                                          break;
                              case 6:     y=sqrt(x);
                                          break;
                              case 7:     y=tan(x);
                                          break;
                              case 8:     y=exp(x);
                        }
                        cout << "i="
                             << i
                             <<" y="
                             << y
                             << "\n";


cin.get();
cin.get();
return 0;
}
```

Vo edna granka za nekolku vrednosti

```
#include <iostream>
#include <cmath>
using namespace std;
```

```
int main()
{

	int i;
	double y;
	cout<<"Enter i=0, 1, 2, 3, 4, 5 or 6:";
	cin>>i;

			switch(i)
		{
			case 0:
			case 5:	y=3*i+2;
				break;
			case 1:	y=i+6;
				break;
			case 2:
			case 6:
			case 4:	y=-5;
				break;
			case 3:	y=2*i-9;
		}
		cout << "i="
			<< i
			<<" y="
			<< y
			<< "\n";

cin.get();
cin.get();
return 0;
}


#include <iostream>
#include <cmath>
using namespace std;
int main()
{
	int i;
	double y;
	cout<<"Enter i=0, 1, 2, 3, or some other value";
	cin>>i;

	switch(i)
		{
			case 0: y=3*i+2;
				 break;
			case 1: y=i+6;
				 break;
			case 2: y=-5;
				 break;
			case 3: y=2*i-9;
			   break;
		default: y=88;
		}
	cout << "i="
			<< i
			<<" y="
			<< y
			<< "\n";

cin.get();
cin.get();
```

```
return 0;
}

Granenje so vrednosti od tipot karakter
#include <iostream>
using namespace std;
int main()
{
	char h;
	int z;
	cout << "D za Da, "
		<< "N za Ne: ";
	cin >> h;
		z=9;//ako korisnikot vnese razlicno od toa sto se bara
		switch(h)
		{
			case 'D': z=1;
			 break;
			case 'N': z=0;
		}
		cout << "z="
			<< z
			<< "\n";

cin.get();
cin.get();
return 0;
}

SWITCH vo kombinacija so FOR
#include <iostream>
using namespace std;
int main()
{
int i, x=2;
	double z;
	for (i=0; i<=3; i++)
	{
		switch(i)
		{
			case 0:	z=3*i;
				break;
			case 1:	z=i+6*x;
				break;
			case 2:	z=-3;
				break;
			case 3:	z=3*i+2;
		}
		cout << "i="
			<< i
			<<" y="
			<< z
			<< "\n";
	}
cin.get();
cin.get();
return 0;
}
```

ADDITIONAL EXERCISES:

1. $g = (2x - n)! + \sum_{i=1}^{n}(2i + a)$

```
#include <iostream>
#include <cmath>
```

```
    using namespace std;

      int main()
     {
      double n,x,i;
      double a,g;
      cout<<"\nEnter n,a and x:";
      cin>>n>>a>>x;

        int F=1;
      for(int i=1;i<=abs(2*x-n);i++)//abs is used if the value of factorial 2*x-
n is negative it will take the absolute value to calculate
       F=F*i;

        double S=0;
      for(i=1;i<=n;i++);
            S=S+(2*i+a);

        g=F+S;

      cout<<"\nThe result g= "<<g<<endl;

      cin.get(); cin.get();
        return 0;
     }
```

2. $g=4x+(2n+1)!+2!+3\sum_{i=1}^{n+1}(2x+i)$

```
#include <iostream>
    using namespace std;

    int main()
     {
      int n, i;
      double x,g;
      cout<<"\nEnter n: ";
      cin>>n;
      cout<<"\nEnter x: ";
      cin>>x;

      int f=1;
      for(i=1;i<=(2*n+1);i++)
       f=f*i;

        int f2=1;
      for(i=1;i<=2;i++)
       f2=f2*i;

        double S=0;
      for(i=1;i<=n+1;i++);
            S=S+(2*x+i);

            g=4*x+f+f2+S;
      cout<<"\n g="<<fixed<<g<<endl;//fixed is used to present the value in non
scientific representation


      cin.get(); cin.get();
        return 0;
     }
```

$$g = \frac{x}{2} + (3n+2)!$$

3.

$$h = 2x + \frac{n!}{2} + 4\sum_{i=1}^{n+1}(3i)$$

```
#include <iostream>
using namespace std;

int main()
{
	double x,g,h;
	int n,i;
	cout << "\nEnter x: ";
	cin >> x;
	cout << "\nEnter n: ";
	cin >> n;

	double s;
	s=0;
	for (i=1;i<=n+1;i++)
		s=s+(3*i);

	double F;
	F=1;
	for (i=1;i<=3*n+2;i++)
		F=F*i;

		double F1;
	F1=1;
	for (i=1;i<=3*n+2;i++)
		F1=F1*i;

	g=x/2+F;
	h=2*x+F1/2+4*s;

	cout << "\n g="
	     << g
	     << "\n h="
	     << h
	     << "\n\n";

	cin.get(); cin.get();
	  return 0;
      }
```

4. $h = 3a - x + (2n+a)! + 2\sum_{i=2}^{n}(3i+a)$

```
#include <iostream>
using namespace std;

int main()
{
	double x,h;
	int n,a,i;
	cout << "\nEnter x: ";
	cin >> x;
	cout << "\nEnter n: ";
	cin >> n;
	cout << "\nEnter a: ";
	cin >> a;
```

```
        double s;
        s=0;
        for (i=2;i<=n;i++)
              s=s+(3*i+a);

        double F;
        F=1;
        for (i=1;i<=(2*n+a);i++)
              F=F*i;


        h=3*a-x+F+2*s;

        cout << h << endl;

        cin.get(); cin.get();
          return 0;
      }
```

5. $h = x + 2\sum_{\substack{i=1 \\ i\neq 5}}^{n-1}(i+2a)$

```
#include <iostream>
using namespace std;

int main()
{
        double x,h;
        int n,a,i;
        cout << "\nEnter x: ";
        cin >> x;
        cout << "\nEnter n: ";
        cin >> n;
        cout << "\nEnter a: ";
        cin >> a;

        double s;
        s=0;
        for (i=1;i<=n-1;i++)
              if (i!=5)
              s=s+(i+2*a);


        h=x+2*s;

        cout <<" h= "<< h << endl;

        cin.get(); cin.get();
          return 0;
      }
```

6. $y = 2a + 3\sum_{\substack{i=1 \\ odd}}^{n-1}(i+x)$

```
#include <iostream>
using namespace std;
```

```
int main()
{
       double x,y;
       int n,a,i;
       cout << "\nEnter x: ";
       cin >> x;
       cout << "\nEnter n: ";
       cin >> n;
       cout << "\nEnter a: ";
       cin >> a;

       double p;
       p=0;
       for (i=1;i<=n-1;i+=2)
             p=p*(i+x);


       y=2*a+3*p;

       cout <<" y= "<< y << endl;

       cin.get(); cin.get();
         return 0;
      }
```