3055 BA SANGAM COLLEGE

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WORKSHEET 18

School: Ba Sangam College **Year / Level: 13**

Subject: Computer Studies **Name of Student**: _____

Strand	3 – Application Packages
Sub strand	3.2 – Programming
Content Learning Outcome	Analyze and construct programs using programming skills learnt from C++

Selection statements

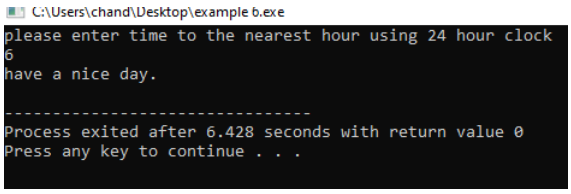
- Many cases in programming you will need to take different actions based on the circumstance. For e.g. If the number is greater than 0 it's a positive number and if the number is less than 0 it's a negative number.
- The common selection structure used are if-else
- The if-else structure directs the program to perform a series of instruction based on the result of the comparison.
- The structure of the if-else statement is given as follows.

if (expression) statement ;
else statement ;

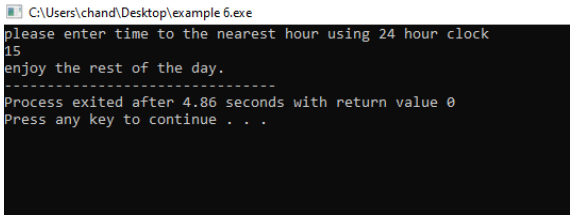
Example 1

The program given below will as the user to enter the time. The time will be in 24 hour format**. If the user enters a time < 12 then message – have a nice day – will be displayed. If the user enters a time 12 or after 12 then a message – enjoy the rest of the day - will be displayed.**

```
#include <iostream>
#include <stdlib.h>
using namespace std;
int main()
{
int time;
cout<<"please enter time to the nearest hour using 24 hour clock"<<endl;
cin>>time;
if (time < 12)
{
cout << "have a nice day."<<endl;
}
else
{
   cout << "enjoy the rest of the day.";
}
return 0;
}
```



The above output is produced when the user enters time before 12.



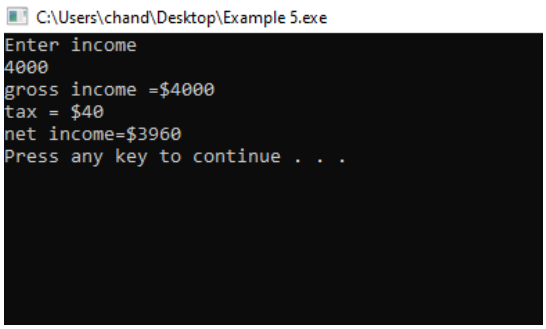
The above output is produced when the user enters time 12 or after 12.

Example 2

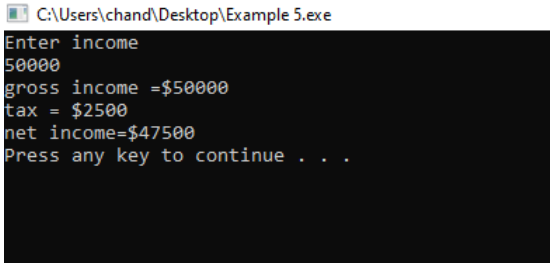
The program given below will ask the user to enter his/her income. If income >=10000 then tax rate is 5 %. If income is <10000 then the tax rate is 1%. The program will calculate and display the following: Gross Income, Tax, Net Income.

```
#include <iostream>
#include <stdlib.h>
using namespace std;
int main()
{
float income,taxrate, tax,netincome;
cout<<"Enter income"<<endl;
cin>>income;
if (income>=10000){
taxrate = 0.05;}
else{
taxrate = 0.01;}
tax= taxrate*income;
netincome = income -tax;
cout<<"gross income =$"<<income<<endl;
cout<<"tax = $"<<tax<<endl;
cout<<"net income=$"<<netincome<<endl;
system("PAUSE");
return 0;

}
```



The above output shows the output when the user enters 4000 as income.

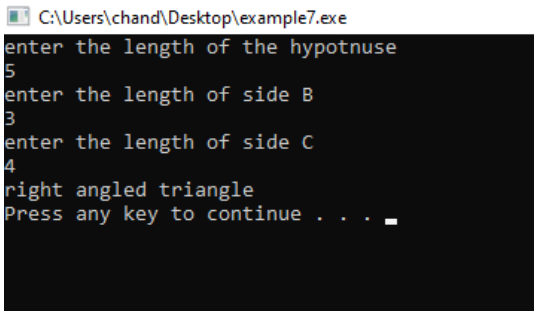


The above output screen shows the output when the user enters 50000 as income.

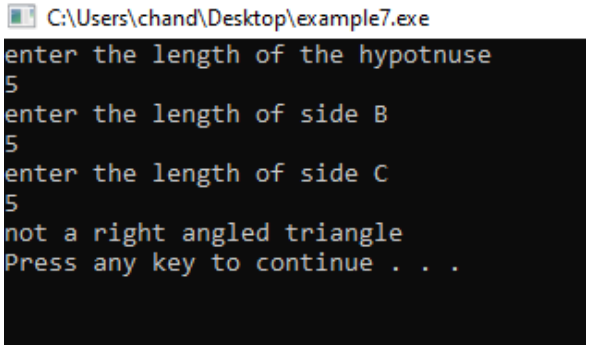
Example 3

```
#include <iostream>
#include <stdlib.h>
using namespace std;
int main()
{
float A,B,C;
cout<<"enter the length of the hypotnuse"<<endl;
cin>>A;
cout<<"enter the length of side B"<<endl;
cin>>B;
cout<<"enter the length of side C"<<endl;
cin>>C;
if((A*A)==(B*B)+(C*C)){

cout<<"right angled triangle"<<endl;}
else{
cout<<"not a right angled triangle"<<endl;
}
system("PAUSE");
return 0;
}
```



The diagram above shows the output when the user enters the length of hypotenuse as 5 and the length of sides B and C as 3 and 4 respectively. This will be a right angled triangle.



The above output screen shows the output produced when the user enters 5 as the length for all sides.

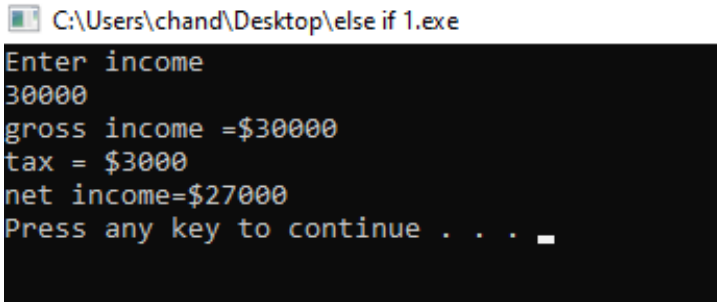
Example 4

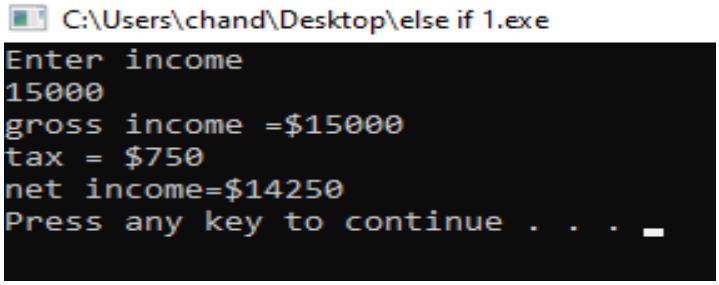
The program given below will ask the user to enter his/her income. The program will calculate the tax that has to be paid. The table below shows the tax rates

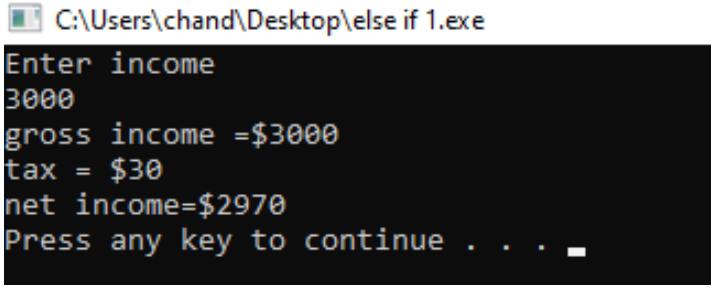
Income	Tax
>= 20000	10%
>=10000	5%
<10000	1%

```
#include<iostream>
#include <stdlib.h>
using namespace std;
int main()
{
float income,taxrate, tax,netincome;
cout<<"Enter income"<<endl;
cin>>income;
if (income>=20001){
taxrate = 0.1;}
else
if (income>=10000){
taxrate = 0.05;}
else{
taxrate = 0.01;}
tax = income * taxrate;
netincome = income -tax;
cout<<"gross income =$"<<income<<endl;
cout<<"tax = $"<<tax<<endl;
cout<<"net income=$"<<netincome<<endl;
system("PAUSE");
return 0;
}
```

The following 3 output screens shows the output produced when different values for numbers were entered.







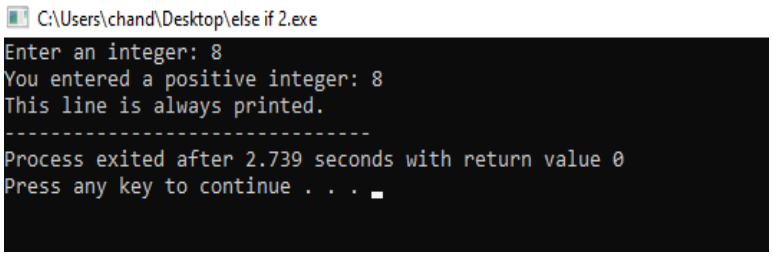
Example 5

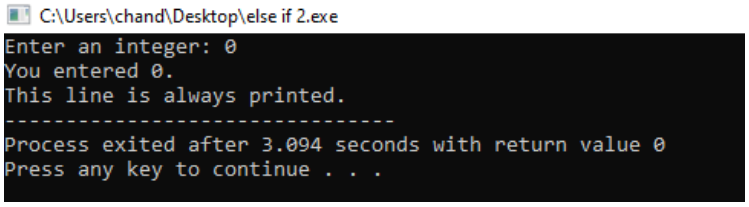
The following program askes the user to enter a number. The program will display whether the number is positive, negative or zeo.

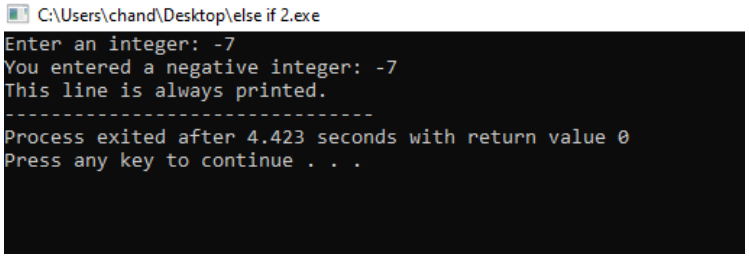
```
#include <iostream>
#include <stdlib.h>
using namespace std;
int main()
{
int number;
cout << "Enter an integer: ";
cin >> number;
if (number > 0) {
cout << "You entered a positive integer: " << number << endl;
}
else if (number < 0) {
cout << "You entered a negative integer: " << number << endl;
}
else
{
cout << "You entered 0." << endl;
   }
```

```
cout << "This line is always printed.";
system("PAUSE");
 return 0;
}
```

The following 3 output screen shows the output produced for 3 different inputs provided by the user.







Example 6

The following program will ask the user to enter his or her mark. The program will diplay the grade with an appropriate comment.

```
include<iostream>
#include <stdlib.h>
using namespace std;
int main()
{int num;
cout<<"Enter your mark "<<endl;
cin>>num;
if (num >= 80){
cout<<" A Grade - congratulations"<<endl;}
else if (num >=65){
cout<<" B Grade - good"<<endl;}
else if (num >=50){
cout<<" C Grade - could have done better"<<endl;}
else
{cout<<"you have failed - better luck next time"<<endl;}
system("PAUSE");
return 0;
}
```

ACTIVITY

Write a C++ program that will ask the user to enter his/her age. If the age is 18 or more, a message – YOU CAN VOTE – will be displayed. If the age is less than 18 the message – YOU CANNOT VOTE – will be displayed.

(4 marks)