12-14

ALGORITMA DAN DASAR PEMROGRAMAN

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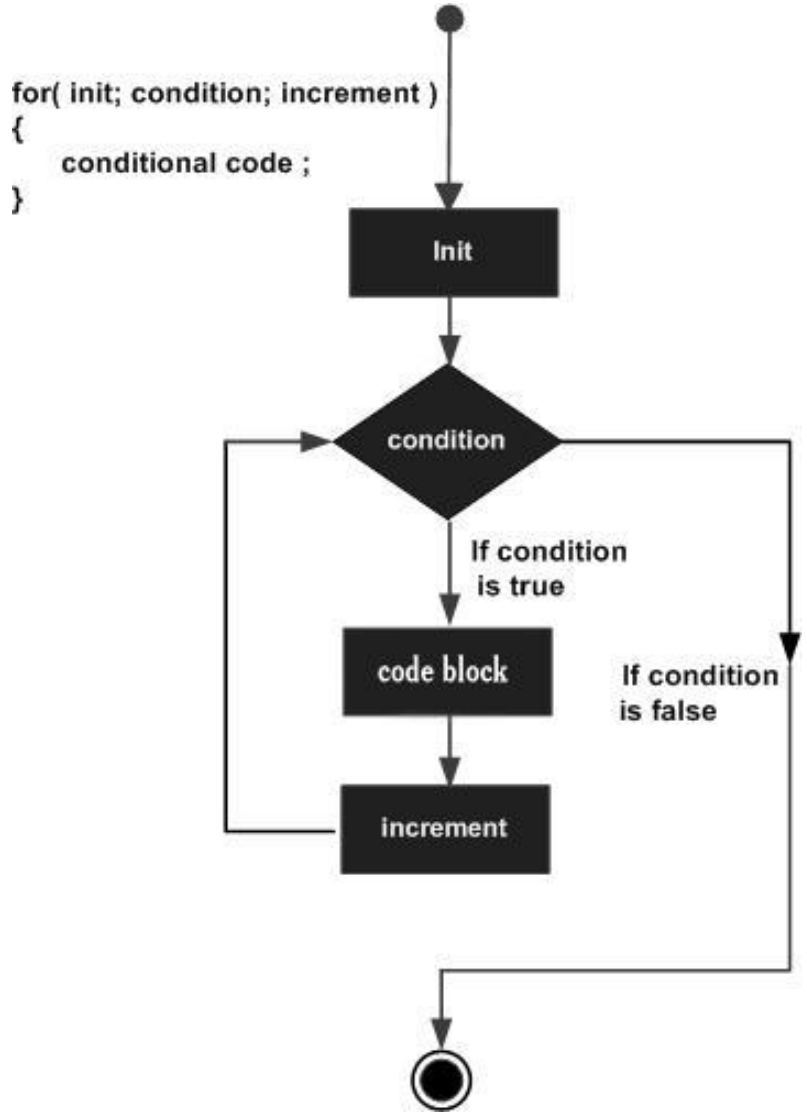
FOR

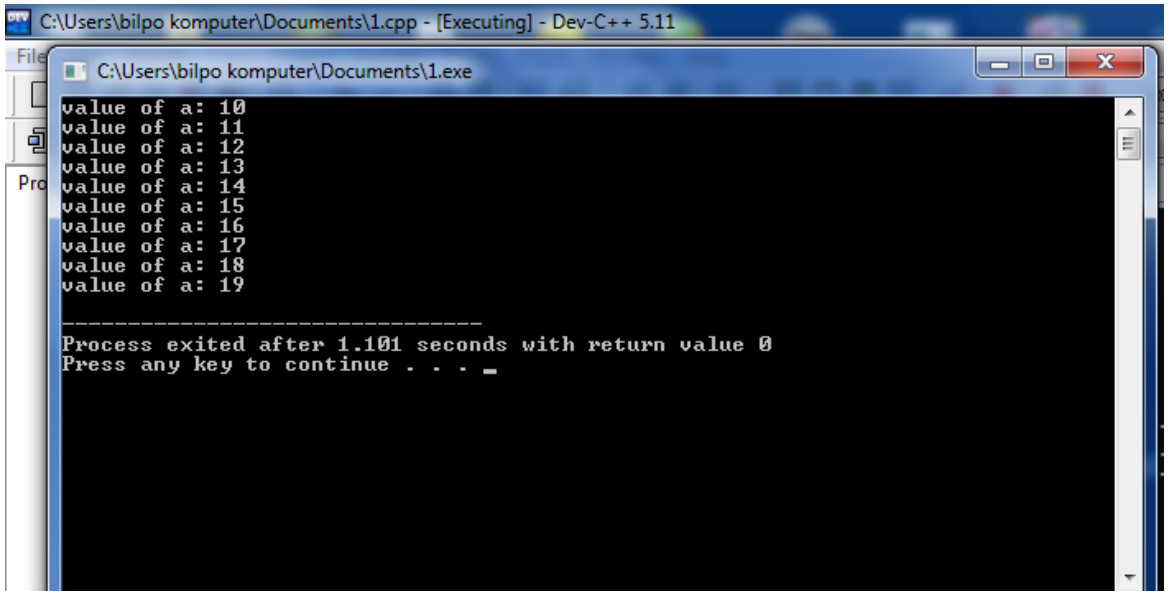
- loop dengan for adalah struktur kontrol pengulangan yang memungkinkan Anda untuk secara efisien menulis sebuah loop yang perlu dieksekusi beberapa kali.

```
for ( init; condition; increment ) {
   statement(s);
}
```

```
for( init; condition; increment )
{
    conditional code ;
}
```



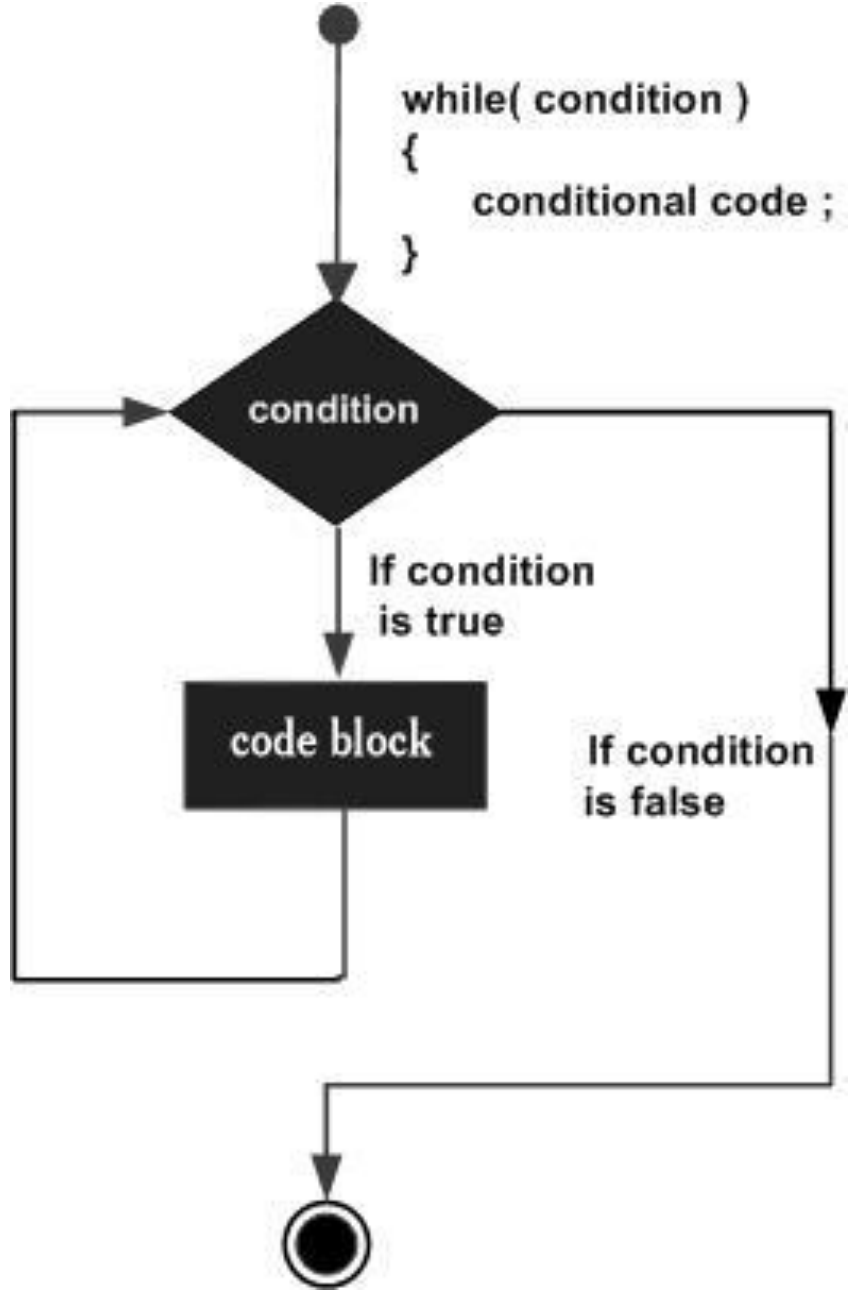
```
#include <iostream>
using namespace std;

int main () {
   // for loop execution
   for( int a = 10; a < 20; a = a + 1 ) {
      cout << "value of a: " << a << endl;
   }

   return 0;
}
```



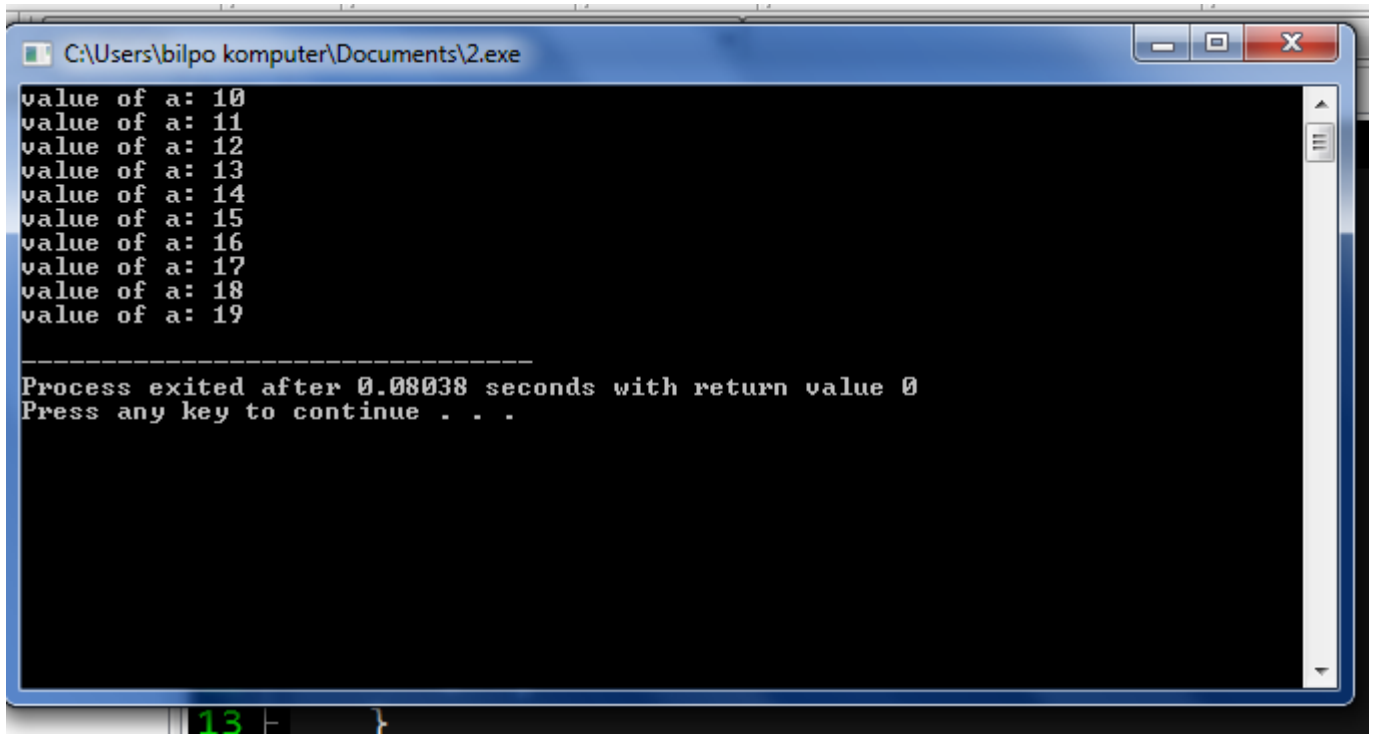
while loop

- Pernyataan while loop berulang kali mengeksekusi pernyataan target selama kondisi yang diberikan benar

```
while(condition) {
   statement(s);
}
```


while(condition)
{
conditional code ;
}
condition
If condition
is true
code block
If condition
is false

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

int main () {
  // Local variable declaration:
  int a = 10;

  // while loop execution
  while( a < 20 ) {
    cout << "value of a: " << a << endl;
    a++;
  }

  return 0;
}
```

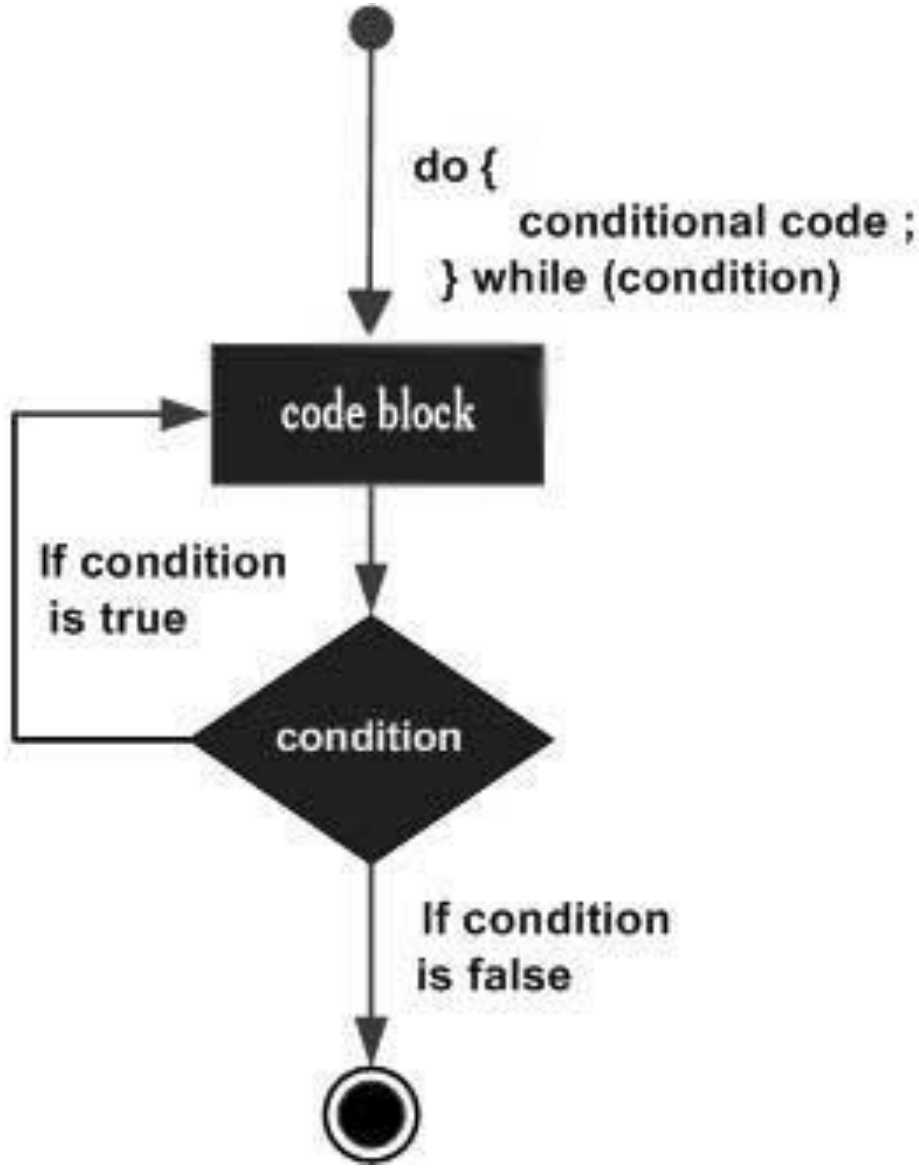


do ... while

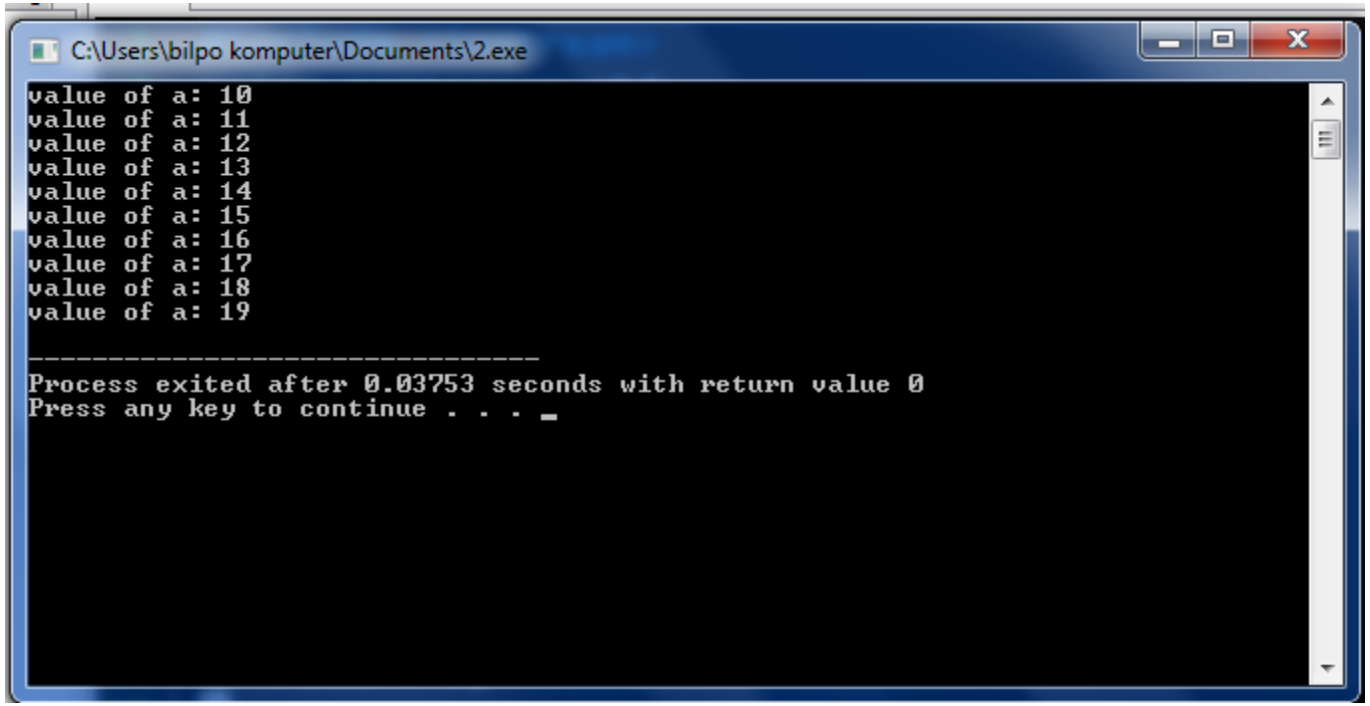
- Tidak seperti loop for dan while, yang menguji kondisi loop di bagian atas loop, loop do ... while memeriksa kondisinya di bagian bawah loop.

- Loop do ... while mirip dengan loop while, kecuali bahwa loop do ... while dijamin akan dieksekusi setidaknya satu kali.

```
do {
   statement(s);
}
while( condition );
```


do {
conditional code ;
} while (condition)
code block
If condition
is true
condition
If condition
is false

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

int main () {
  // Local variable declaration:
  int a = 10;

  // do loop execution
  do {
    cout << "value of a: " << a << endl;
    a = a + 1;
  } while( a < 20 );

  return 0;
}
```



Nested loop

- Sebuah loop dapat bersarang di dalam loop lain. C ++ memungkinkan setidaknya 256 level sarang.

```
for ( init; condition; increment ) {
   for ( init; condition; increment ) {
      statement(s);
   }
   statement(s); // you can put more statements.
}
```

The syntax for a **nested while loop** statement in C++ is as follows −

```
while(condition) {
   while(condition) {
      statement(s);
   }
   statement(s); // you can put more statements.
}
```

The syntax for a **nested do...while loop** statement in C++ is as follows −

```
do {
   statement(s); // you can put more statements.
   do {
      statement(s);
   } while( condition );

} while( condition );
```

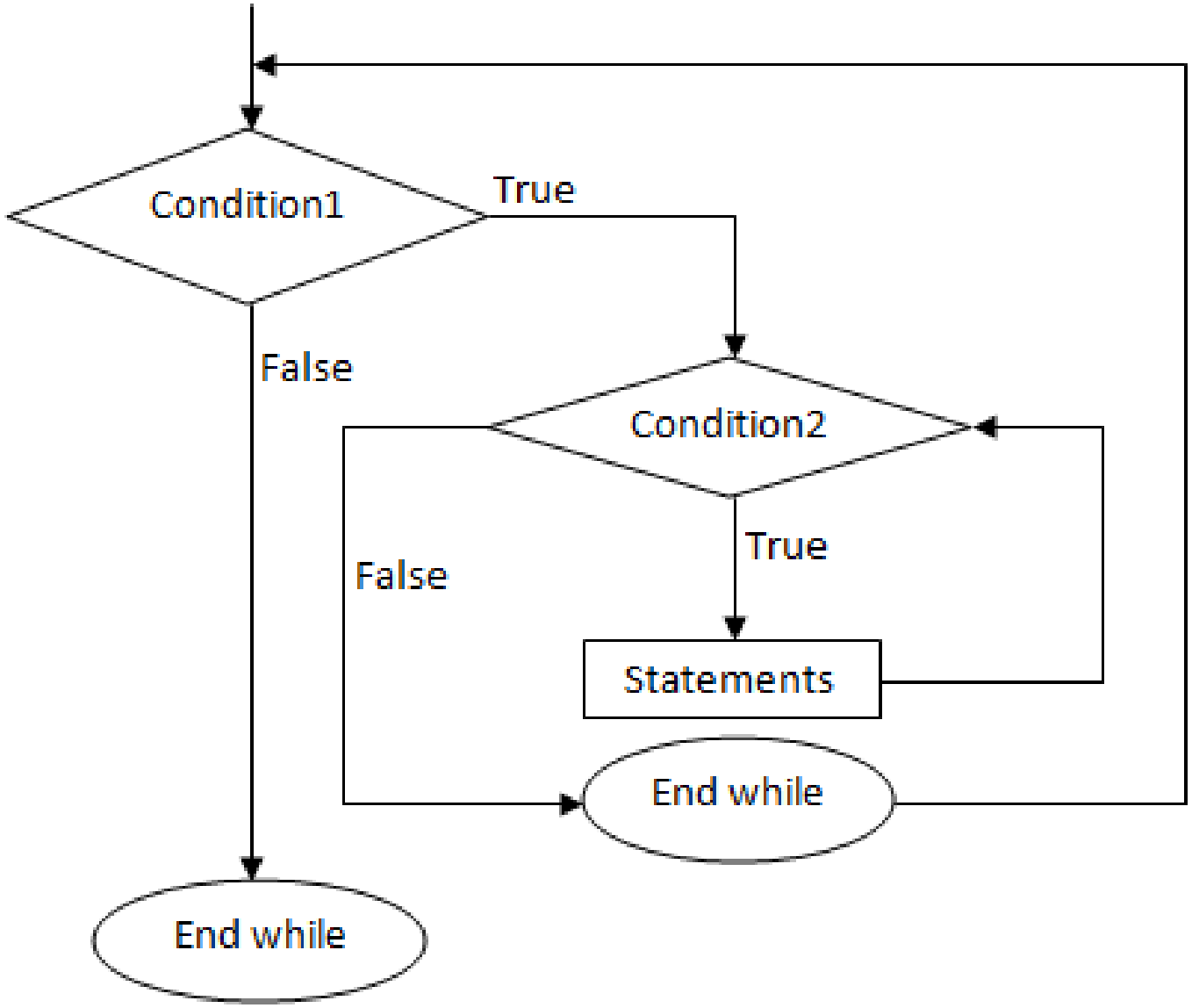
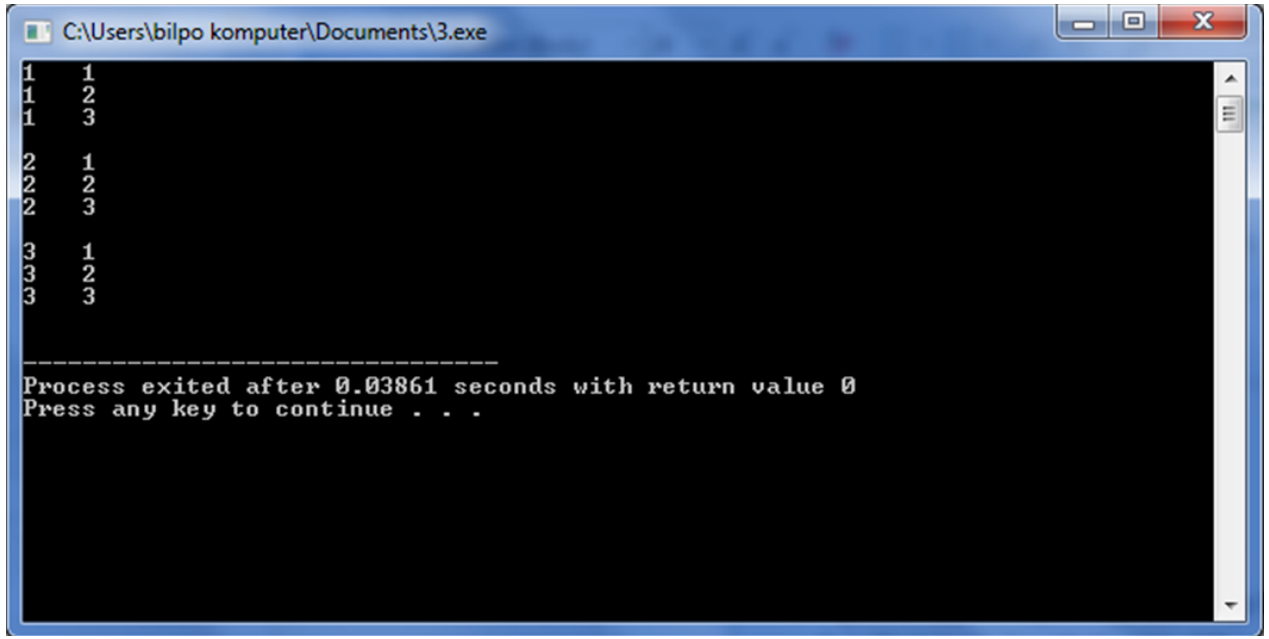


fig: Flowchart for nested while loop

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

int main(){
    for (int i=1; i<=3; i++){  //loop terluar
        for (int j=1; j<=3; j++){  //loop didalam
            cout << i << "   " << j << endl;
        }
    cout << endl;
    }
}
```



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

int main()
{
   int i=1,j;
   while (i <= 5)
   {
      j=1;
      while (j <= i )
      {
         cout <<j;
         j++;
      }
      cout << endl;
      i++;
   }
return 0;
}
```