PROGRAM STRUCTURE

1.
```c
#include <stdio.h>

int main(void)
{
    puts("It's me, your first program.");
    return 0;
}
```

Output is

It's me, your first program.

2.
```c
#include <stdio.h>
int main()
{
    /* my first program in C */
    printf("Hello, am Lucy \n");

    return 0;

}
```
Output is

Hello, am Lucy

BASIC SYNTAX

1. Semicolons- it indicates the end of one logical entity.

    example

    ("Hello, am Lucy \n");

    return 0;

2. Comments- helping text in your c program.

    Example

    /* my first program in C */

3. Identifiers — is a name used to identify a variable, function or any other user-defined item.

    Example

    Move_name

4. Keywords — reserved words in c

    Example

    int

5. Whitespace — used in c to describe blanks, tabs, newline characters and comments.

    Example

    Int age;

DATA TYPES

1. Integer types

   Example

   0 to 255

2. Floating-point types

   3.7E- 5000 to 2.0E+5000

3. The void type

   It specifies that no value is available

VARIABLES

```
#include <stdio.h>
// Variable declaration:
extern int a, b;
extern int c;
extern float f;
int main ()
```

```c
{
/* variable definition: */
int a, b;
int c;
float f;
/* actual initialization */
a = 5;
b = 10;

c = a + b;
printf("value of c : %d \n", c);
f = 60.0/2.0;
printf("value of f : %f \n", f);
return 0;
}
```

Output

value of c : 15

value of f : 30.000000

CONSTANTS AND LITERALS

1. Integer Literals

    212 /* Legal */

2. Floating-point Literals

    .e55 /* Illegal: missing integer or fraction */

3. Character Constants

    ```c
    #include <stdio.h>
    int main()
    {
    printf("Hello\tLucy\n\n");
    return 0;
    }
    ```

    Output
    Hello   Lucy

4. String Literals

    "hello, Lucy"
    "hello, \

Lucy"

"hello, " "L" "ucy"

5. <u>Defining Constants</u>

```c
#include <stdio.h>
#define LENGTH 20
#define WIDTH 10
#define NEWLINE '\n'
int main()
{
 int area;

 area = LENGTH * WIDTH
printf("value of area : %d", area);
 printf("%c", NEWLINE);
```

```
printf("value of area : %d", area);

printf("%c", NEWLINE);
```

```
return 0;
```

output is 200

6. The constant Keyword

```
#include <stdio.h>
int main()
{
const int LENGTH = 20;
const int WIDTH = 10;
const char NEWLINE = '\n';
int area;

area = LENGTH * WIDTH;
printf("value of area : %d", area);
printf("%c", NEWLINE);
return 0;
}
```

Output is 200

Projects

- NewFile.cpp
- NewFile1.cpp
- **NewFile2.cpp**

NewFile.cpp | NewFile1.cpp | NewFile2.cpp

```c
#include <stdio.h>
/*function declaration*/
void next(void);
static int counter=7; /*  gloabal variable */
main(){
while(counter<10){
    next();
    counter++;  }
return 0;}
void next( void ){    /*function definition */
static int iteration =13;
/*local static variable*/iteration++;
printf("iteration=%d and counter=%d\n'",iteration, counter);}
```

Outline

- Includes
  - counter : static int
  - next() : void
  - next() : void

Messages

File	Line	Notification
⚠ NewFile2.cpp	5	ISO C++ forbids declaration of 'main' with no type

NewFile2.cpp   Ln : 12   Col : 38   Sel : 0   ⓘ Compilation success in 0.0.609 s

Type here to search

10:01 AM
8/10/2021

C:\Users\HP\Documents\Projects\NewFile2.exe

```
iteration=14 and counter=7
'iteration=15 and counter=8
'iteration=16 and counter=9
'

Process returned 0    execution time : 3.228 s
Press any key to continue.
```

Outline

Includes

counter : static int

next() : void

next() : void

Messages

File	Line	Notification
NewFile2.cpp	5	ISO C++ forbids declaration of 'main' with no type

NewFile2.cpp   Ln : 11   Col : 22   Sel : 0   Compilation success in 0.0.609 s

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File   Edit   Search   View   Project   Run   Tools   Help
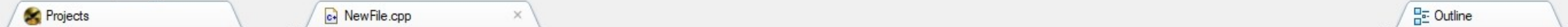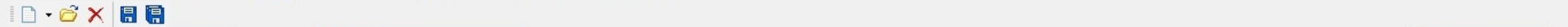
NewFile.cpp ×

```
1  #include <stdio.h>
2  /*function declaration */
3  main(){
4  {register int weight ;int *ptr=&weight ;/*it produces an error when the compilation occurs ,we can not get
5  }
6
```

C:\Users\HP\Documents\Projects\NewFile.exe

```
Process returned 0   execution time : 1.808 s
Press any key to continue.
```

Projects

NewFile.cpp

Outline

Includes
  weight : register in
  ptr : int *

Messages

File		
⚠ NewFile.cpp	3	ISO C++ forbids declaration of 'main' with no type
ⓘ NewFile.cpp		
⚠ NewFile.cpp	4	unused variable 'ptr'

NewFile.cpp   Ln : 6   Col : 1   Sel : 0   ⓘ Compilation success in 0.0.703 s

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8/10/2021

File Edit Search View Project Run Tools Help

Projects

- **NewFile.cpp**
- NewFile1.cpp

NewFile.cpp   ×   NewFile1.cpp

```c
1   #include<stdio.h>>
2    int main()
3    {
4       int a=5;
5       int b=10;
6       int c ;
7       c=a+b;
8       printf( "line 1-value of c%d\n",c);
9     c=a*b;
10     printf("line 2-value of c %d\n",c);
11        return 0;
12    }
```

C:\Users\HP\Documents\Projects\NewFile.exe

```
line 1-value of c15
line 2-value of c 50

Process returned 0   execution time : 1.526 s
Press any key to continue.
```

Outline

> Includes
  ● main() : int

Messages   ×

File	Line	Notification
⚠ NewFile.cpp	1: 18	extra tokens at end of #include directive

NewFile.cpp   Ln : 10 Col : 35 Sel : 0   ⓘ Compilation success in 0.0.500 s

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8/10/2021

Projects
- NewFile.cpp
- **NewFile1.cpp**

NewFile.cpp   NewFile1.cpp

```c
#include<stdio.h>
int main(){
    int a=21;
    int b=10;
    int c;
    if( a==b ){
        printf("line 1 - a is equal to b\n" );
    }else{
        printf("line 1 - a is not equal to b\n" );
    }
    if (a>b ){
        printf("line 2-a is less than b\n");
    }else{
        printf("line 2 -a is not less than b\n");
    }
    if(a>b){
        printf("line 3-a is greater than b\n");
        }else{
            printf("line 3 - a is not greater than b\n");
        }
        /* Lets change value of a and b*/
        a=5;
        b=20;
        if(b<=a){
            printf("line 4 - a is either less than or equal to b\n");
        }
        if (b>=a){
            printf("line 5 -b is either greater than oe equal to b\n");
        }}
```

Outline
- Includes
- main() : int

C:\Users\HP\Documents\Projects\NewFile1.exe

```
line 1 - a is not equal to b
line 2-a is less than b
line 3-a is greater than b
line 5 -b is either greater than oe equal to b

Process returned 0    execution time : 0.218 s
Press any key to continue.
```

Messages

File	Line	Notification

NewFile1.cpp   Ln : 19   Col : 19   Sel : 0   Compilation success in 0.0.484 s

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File   Edit   Search   View   Project   Run   Tools   Help

```
Projects                    NewFile.cpp  ×
  NewFile.cpp
                   1    #include<stdio.h>
                   2    int main()
                   3  ┌ {
                   4    int n;
                   5    printf( "12,");
                   6    scanf("%d",&n);
                   7    if(n>10)
                   8        printf("number is greater");
                   9
                   10 └ }
```

C:\Users\HP\Documents\Projects\NewFile.exe

```
12,number is greater
```

Outline
  Includes
  main() : int

NewFile.cpp   Ln : 5   Col : 12   Sel : 0   Compilation success in 0.0.515 s

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                                                                                   8/10/2021

File   Edit   Search   View   Project   Run   Tools   Help

Projects   NewFile.cpp

NewFile.cpp

```c
1   #include<stdio.h>
2   int main()
3   {
4   int n;
5   printf( "12,");
6   scanf("%d",&n);
7   if(n>10)
8       printf("number is greater");
9
10  }
```

Outline

> Includes
  ● main() : int

C:\Users\HP\Documents\Projects\NewFile.exe

```
12,number is greater
```

NewFile.cpp   Ln : 5   Col : 12   Sel : 0   ⓘ Compilation success in 0.0.515 s

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File   Edit   Search   View   Project   Run   Tools   Help

Projects
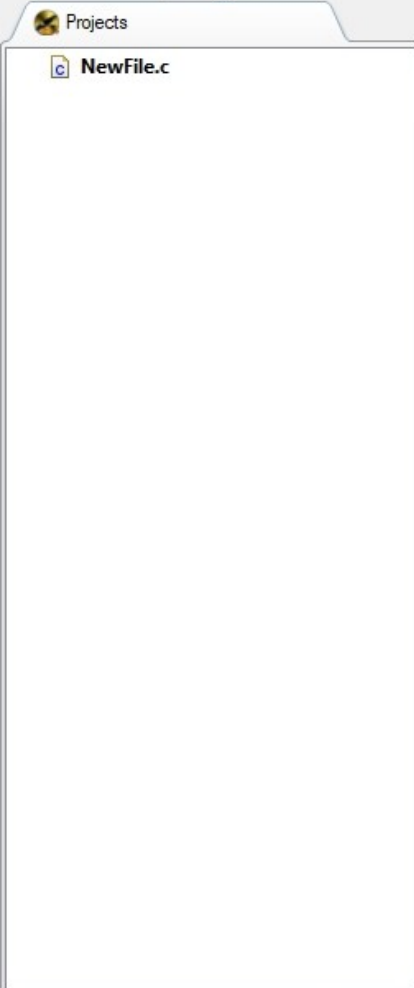
📄 NewFile.c

📄 NewFile.c ✕

```c
1   #include<stdio.h>
2   int main()
3   {
4       int a=100;
5       if(a<20)
6       {
7           /*if condition is true*/
8               printf("a is less than 20\n");
9
10      }
11      else
12      {
13      /*if condition is false*/
14      printf("a is not less than 20\n");
15      }
16      printf("value of a is :%d\n",a);
17
18      return 0;
19  }
20
```

Outline

Includes

🔵 main() : int

C:\Users\HP\Documents\Projects\NewFile.exe

```
a is not less than 20
value of a is :100

Process returned 0    execution time : 0.196 s
Press any key to continue.
```

📄 NewFile.c   Ln : 18   Col : 10   Sel : 0   ℹ Compilation success in 0.0.437 s

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File   Edit   Search   View   Project   Run   Tools   Help

Projects   NewFile.c   NewFile.cpp   Outline

NewFile.c   1   #include<stdio.h>   Includes
NewFile.cpp   2   int main()   main() : int
                       3   {
                       4   /*setting variable*/
                       5   int j=4;
                       6   while(j>0)
                       7   {
                       8   printf("variable of j:%d\n",j);
                       9   j--;
                      10   }
                      11   return 0;
                      12   }

C:\Users\HP\Documents\Projects\NewFile.exe

```
variable of j:4
variable of j:3
variable of j:2
variable of j:1

Process returned 0   execution time : 0.349 s
Press any key to continue.
```

NewFile.cpp   Ln : 5   Col : 13   Sel : 0   Compilation success in 0.0.500 s

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                                                                                 8/10/2021

File   Edit   Search   View   Project   Run   Tools   Help

Projects

NewFile.c   NewFile.cpp   ×

```c
1    #include <stdio.h>
2    int main()
3    {
4    /*Value definitions*/
5    int y= 10;
6    /*do loop execution*/
7    do
8    {
9        printf("value of y:%d/n",y) ;
10       y=y+2;
11   }
12   while (y<22);return 0;
13   }
```

Outline

> Includes
  main() : int

C:\Users\HP\Documents\Projects\NewFile.exe

```
value of y:10/nvalue of y:12/nvalue of y:14/nvalue of y:16/nvalue of y:18/nvalue of y:20/n
Process returned 0    execution time : 2.996 s
Press any key to continue.
```

NewFile.cpp   Ln : 10   Col : 11   Sel : 0   ⓘ Compilation success in 0.0.516 s

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8/10/2021

Projects | NewFile.c | NewFile.cpp | Outline

Projects:
- NewFile.c
- **NewFile.cpp**

Outline:
- Includes
  - max(int, int) : int
  - main() : int
  - max(int, int) : int

```c
1   #include <stdio.h>
2   /*fuction declaration*/
3   int max(int num1,int num2);
4   int main()
5   {
6       int a=100;
7       int b=200;
8       int ret;
9       /*calling a fuction to get max value*/
10      ret=max(a,b);
11      printf("max value is :%d\n",ret);
12      return 0;
13  }
14  /*function returning the max between two numbers*/
15  int max(int num1,int num2)
16  {
17      int results;
18       if(num1>num2)
19          results=num1;
20        else
21        results=num2;
22          return 0;
23      }
```

C:\Users\HP\Documents\Projects\NewFile.exe

```
max value is :0

Process returned 0   execution time : 0.157 s
Press any key to continue.
```

NewFile.cpp   Ln : 20   Col : 7   Sel : 0   ⓘ Compilation success in 0.0.453 s

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1:10 PM
8/10/2021

File   Edit   Search   View   Project   Run   Tools   Help

Projects

NewFile.cpp

Outline

NewFile.c
NewFile.cpp

```c
1    #include <stdio.h>
2    /*glabal variable declaration*/
3    int g=20;
4    int main()
5    {
6    /*global variables declaration*/
7    int g=10;
8    printf("value of g = %d\n",g);
9    return 0;
10    }
```

Includes
g : int
main() : int

C:\Users\HP\Documents\Projects\NewFile.exe

```
value of g = 10

Process returned 0    execution time : 3.006 s
Press any key to continue.
```

NewFile.cpp   Ln : 4   Col : 11   Sel : 0   Compilation success in 0.0.578 s

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8/10/2021

File   Edit   Search   View   Project   Run   Tools   Help

Projects	NewFile.c ×	NewFile.cpp ×	Outline

```c
1    #include<stdio.h>
2    int main()
3    {
4        int arr[5],i;
5        for(i=0;i<5;i++)
6        {
7            printf("enter a value for arr[%d]\n",i);
8            scanf("%d",&arr[i]);
9        }
10               printf("the array elements are:\n");
11               for(i=0;i<5;i++)
12               {
13                   printf("%d\t",arr[i]);
14               }
15           return 0;
16           }
17
18
19
```

Projects
- NewFile.c
- **NewFile.cpp**

Outline
- Includes
- main() : int

C:\Users\HP\Documents\Projects\NewFile.exe

```
enter a value for arr[0]
```

NewFile.cpp   Ln : 13   Col : 31   Sel : 0   Compilation success in 0.0.531 s

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8/10/2021

File   Edit   Search   View   Project   Run   Tools   Help

Projects   NewFile.c   ×   NewFile.cpp   ×   Outline

```
NewFile.c              1    #include<stdio.h>                                              >    Includes
NewFile.cpp            2    int main()                                                          main() : int
                       3    {
                       4        int arr[5],i;
                       5        for(i=0;i<5;i++)
                       6        {
                       7            printf("enter a value for arr[%d]\n",i);
                       8            scanf("%d",&arr[i]);
                       9        }
                      10            printf("the array elements are:\n");
                      11            for(i=0;i<5;i++)
                      12            {
                      13                printf("%d\t",arr[i]);
                      14            }
                      15        return 0;
                      16        }
                      17
                      18
                      19
```
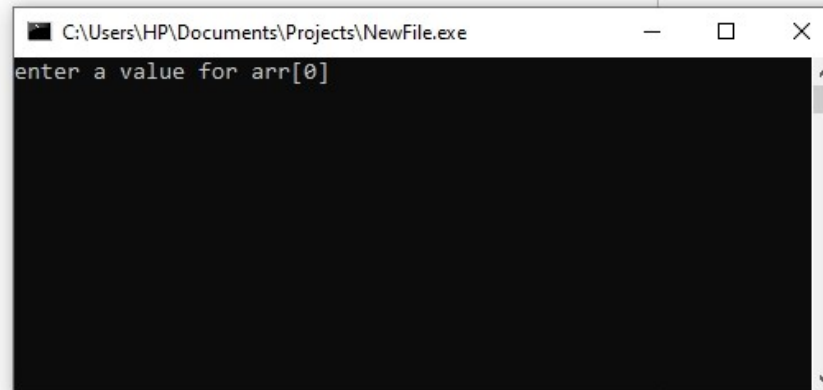
C:\Users\HP\Documents\Projects\NewFile.exe

```
enter a value for arr[0]
_
```

NewFile.cpp   Ln : 13   Col : 31   Sel : 0   Compilation success in 0.0.531 s

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                                                                                       8/10/2021