

```

1.  //-----
2.  //File p01.cpp contains source that illustrates how a C++ program is formed
3.  //-----
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7.  //Course:      CS1613, Programming I
8.  //CRN:         10877, Spring, 2003
9.  //Project:     p01
10. //Due:         August 21, 2003
11. //Account:     tt
12. //-----
13. //Copyright August, 2003 by Thomas R. Turner.
14. //Do not reproduce without permission from Thomas R. Turner
15. //-----
16. //C++ standard include files
17. //-----
18. #include <iostream>
19. //-----
20. //Namespaces
21. //-----
22. using namespace std;
23. //-----
24. //Function main prints the limerick "Eels" by Ogden Nash
25. //-----
26. int main()
27. {   cout << endl;           //Print a newline
28.     cout << "I like eels";   //Print the string "I like eels"
29.     cout << endl;           //Print a newline
30.     cout << "except as meals" << endl << "and how they feels." << endl;
31.     return 0;
32. }
```

Figure 1. Program p01.

1. File description comment (optional). lines 1 – 3
 2. Author identification comment. lines 3 – 12
 3. Copyright comment (optional) lines 12 – 15
 4. C++ standard include directives. lines 15 – 18
 5. Namespace statement. lines 19 – 22
 6. Function *main*. lines 23 – 32
1. Comments:
 - 1.1. Single line comments start with `“//”` and end with a newline.
 - 1.2. Multi-line comments start with `“/*”` and end with `“*/”`
 2. Macro directives begin with a `“#”`
 3. Functions

function-definition:
 function-header function-body

function-header:
 type function-id (parameter-list)

type:
 standard-type

user-defined-type

standard-type:
boolean
char
short
int
long
float
double
...

function-id:
id

parameter-list:
∈
parameter
parameter-list , *parameter*

parameter:
type *parameter-id*

parameter-id:
id

function-body:
{ *statement-list* }

statement-list:
declaration ;
statement ;
statement-list declaration ;
statement-list statement ;

Exercises:

1. Identify the lines in program **p01** that consist entirely of comments.
2. Identify the lines in program **p01** that contain macro directives.
3. Identify the lines in program **p01** that contain declarations.
4. Identify the lines in program **p01** that contain executable statements.
5. Describe the difference between a comment and an executable statement.
6. Write all the sentences that can be produced with the following grammar.

1	<i>sentence</i>	→	<i>subject verb predicate</i>
2	<i>subject</i>	→	I
3	<i>verb</i>	→	am
4	<i>predicate</i>	→	exquisite
5	<i>predicate</i>	→	happy
6	<i>predicate</i>	→	svelte
7	<i>predicate</i>	→	perfect

7. Describe all the sentences that can be produced with the following grammar.

1	<i>sentence</i>	→	<i>subject verb predicate</i>
2	<i>subject</i>	→	It
3	<i>verb</i>	→	is
4	<i>predicate</i>	→	<i>fixed-part you-sequence !</i>
5	<i>fixed-part</i>	→	all about
6	<i>you-sequence</i>	→	<i>last-you</i>
6	<i>you-sequence</i>	→	<i>you-sequence , last-you</i>
7	<i>last-you</i>	→	you