

Announcements



- ❖ Website is up!

- <http://zeus.pacificu.edu/shereen/CS150>

- ❖ All lecture slides, assignments, lab notes will be available on this site in two forms:

- Microsoft PowerPoint or Word
 - PDF (Acrobat Reader)

Implementation



```
//Program purpose:  converts distance in miles to kilometers
//Author:  Friedman & Koffman
//Date:  August 30, 2000
#include <iostream>

int main()
{
    using namespace std;

    const float KM_PER_MILE = 1.609;
    float miles, kms;

    //Get the distance in miles
    cout << "Enter the distance in miles";
    cin >> miles;

    //Convert the distance to kilometers
    kms = KM_PER_MILE*miles;

    //Display the distance in kilometers
    cout << "The distance in kilometers is" << kms << endl;
}

```

C++ Language Elements



❖ Comments are

- how you explain in English what your program does
- Ignored by the compiler
- Very, very, very important

❖ Format of comments:

```
//comment
```

```
/* comment */
```

Compiler directives



- ❖ `#include <iostream>`
- ❖ `#` signifies compiler directive
- ❖ Processed BEFORE program translation
- ❖ `#include` tells the compiler to look for libraries
- ❖ `<>` signifies part of standard C++ libraries
- ❖ We'll see other examples later of compiler directives



Namespace std

- ❖ `using namespace std;`
- ❖ Indicates that we will be using objects that are named in a region called namespace std.
- ❖ The statement ends in a semicolon.
- ❖ The statement appears in all our programs.



Main function definition

```
int main( )  
{  
    main program  
}
```

- ❖ Your main program is where execution starts.
- ❖ Every program has one!

Program statements



❖ Declaration Statements

- What data is needed by the program?
- `const float KM_PER_MILE = 1.609;`
- `float miles, kms;`

❖ Executable Statements

- Everything else
- Examples:
 - ✓ `cout, cin`
 - ✓ Assignment

❖ All end with semicolon ;



Identifiers

- ❖ Names used in program

- ❖ Examples:
 - Variables
 - Functions

- ❖ Rules:
 - Begin with letter or underscore
 - Consist of letters, digits and underscore
 - Cannot use reserved word



Identifiers, Contd.

❖ Reserved Words examples

- `const, float, int, return, main`
- Complete list in Appendix B of text

❖ Case sensitive

❖ Valid or Invalid?

`Letter1`

`1letter`

`Inches`

`Inches*num`

`joe's`

`cent_per_inch`

`two-dimensional`

`hello`

Data Types and Declarations



- ❖ A data type is a way to represent a particular set of values
- ❖ Four types
 - Integers
 - Reals
 - Booleans
 - Characters



Integers

- ❖ Whole numbers, positive or negative
- ❖ Stored as binary number
- ❖ Datatype is called int
- ❖ Operations?
- ❖ Finite
- ❖ Examples of integer literals are: 123, -23, 0, 32767



Reals

- ❖ Real numbers can contain fractional parts
- ❖ Stored in floating point format
- ❖ Datatype is float
- ❖ Operations?
- ❖ Examples of float literals are: 1.0, -.1, 0., 12E5, -1E-2

Characters



- ❖ Individual character--letter, digit, symbol
- ❖ Characters stored as byte
- ❖ Datatype is char
- ❖ Operations?
- ❖ Char literals are enclosed in single quotes and examples include: 'A' 'a' '?'

Purpose of Datatypes



- ❖ Different ones allow compiler to know how to represent value
- ❖ Different datatypes can use different operations
- ❖ The integer 2 is different from 2.0 and the character 2 (all stored differently)



Declarations

- ❖ Declarations are at the beginning of a program
- ❖ They list the variables used
- ❖ Format:

`datatype identifier;`