



CHAPTER 6

Basic Components of C

A PROGRAM OUTLINE

```
//Header Comment
```

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

```
int main() {  
    //program
```

```
    return 0;  
}
```



THE PROGRAMMING PROCESS

1. Edit your program
2. Compile your program
3. Execute your program
4. Return to step 1, if you are not satisfied with the results



WHAT IS PROGRAMMING?

- Data Input and Output
- Data Storage
- Data Manipulation



DATA STORAGE

○ Data Types

- int
- char
- float
- double
- Integers
- Characters
- Decimal numbers (6-7 digits)
- Decimal numbers (12-13 digits)



VARIABLES

- Declaration

- `int inches_in_foot;`

- Initialization

- `inches_in_foot = 12;`

- It also possible to do both in the same step

- `int inches_in_foot = 12;`



RULES FOR VARIABLE NAMES

1. Must be comprised of letters, digits, and/or underscores
2. A letter or underscore must be the first character
3. Names are case sensitive
4. Names cannot be a keyword/reserved word
 - float, char, int, return, for, do, double, if, void
5. Choose names that make sense for their purpose



ASSIGNMENT STATEMENT

- `<var> = <expression>;`
- Example:
 - `int inches_in_foot = 12;`
 - `int feet_in_mile = 5280;`
 - `int inches_in_mile;`
 - `inches_in_mile = inches_in_foot * feet_in_mile;`



DATA OUTPUT

○ Data Types

- int
- char
- float
- double

○ Percent Code

- %d
- %c
- %f
- %lf

○ Example:

- `inches_in_mile = inches_in_foot * feet_in_mile;`
- `printf("%d", inches_in_mile);`



PRACTICE

- Create a program that calculates the number of minutes in a day using the number of minutes in an hour (60) and the number of hours in a day (24).
- Print the result to the screen.



INCREMENT STATEMENTS

- Increment statements are unique assignment statements.
- Remember the general form for an assignment statement is:
 - `<var> = <expression>;`



INCREMENTING WITH AN EXPRESSION

- `int age = 20;`
- `age = age + 1;`

- `int age = 20;`
- `age = age + 5;`



INCREMENTING BY 1

- `int age = 20;`
- `age++;`
- `++` is a unique shorthand that only increments by 1



DECREMENTING WITH AN EXPRESSION

- `int age = 20;`
 - `age = age - 1;`
-
- `int age = 20;`
 - `age = age - 5;`



DECREMENTING BY 1

- `int age = 20;`
- `age--;`
- `--` is a unique shorthand that only decrements by 1



A++ VERSUS ++A;

- The following statements will have the same result during execution
 - a++;
 - ++a;
- The following statements will have different results during execution
 - b = a++;
 - b = ++a;

