# 15CSE102
# Computer Programming


Credits: jobssearch24.com

# Know Your Variables

# Know Your Variables

Variables must have a name

# But not these names!!

| Table 3-1 | C Language Keywords | | |
|---|---|---|---|
| auto | double | int | struct |
| break | else | long | switch |
| case | enum | register | typedef |
| char | extern | return | union |
| const | float | short | unsigned |
| continue | for | signed | void |
| default | goto | sizeof | volatile |
| do | if | static | while |

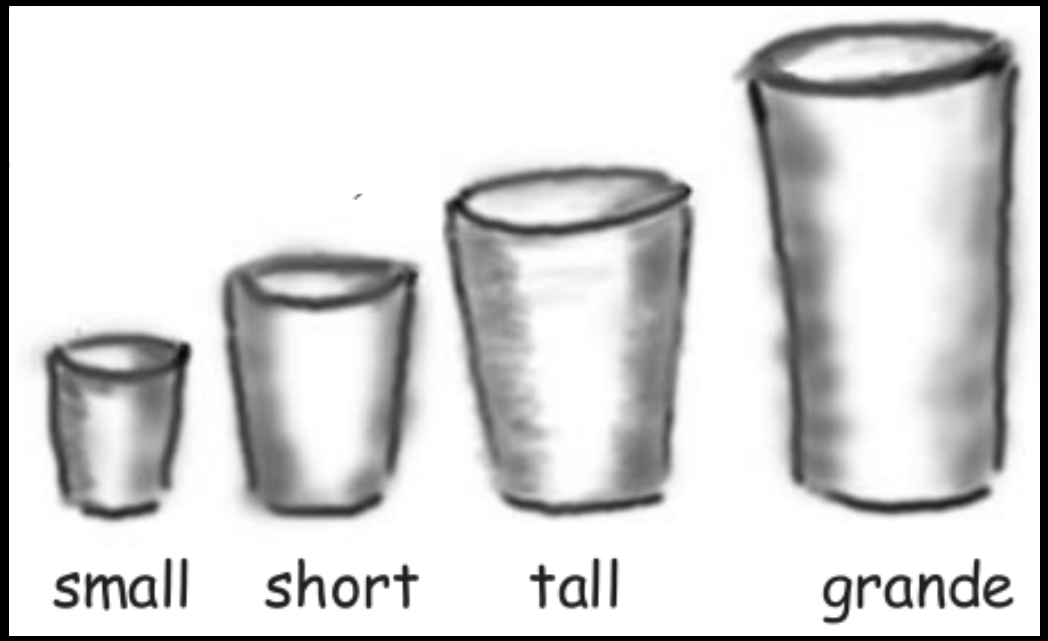
Credits: C for Dummies

# Know Your Variables

Variables must have a name

Variables must have a type

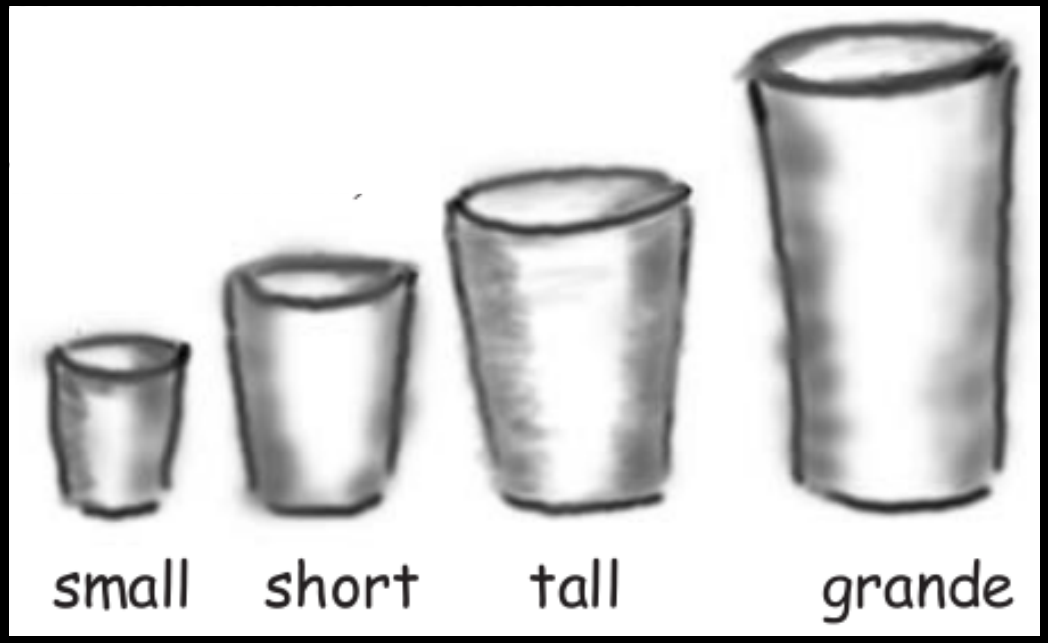
# Variable Types




Variables are like cups/containers that contain something!

Credits: Head First Java

# Variable Types

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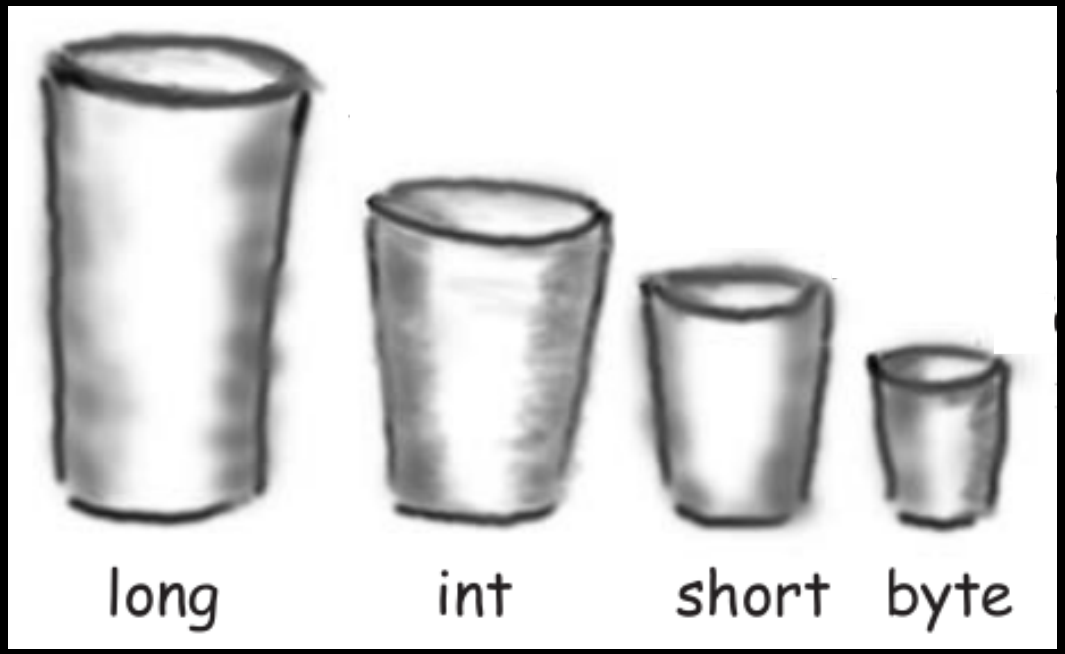
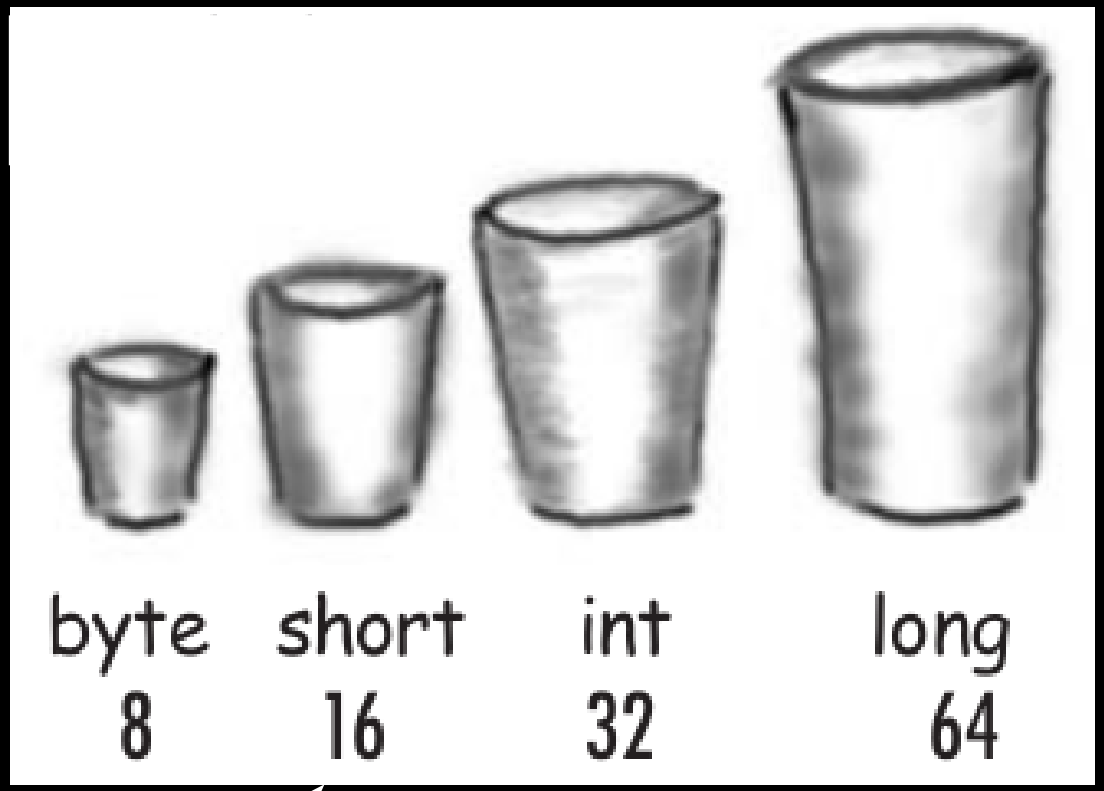
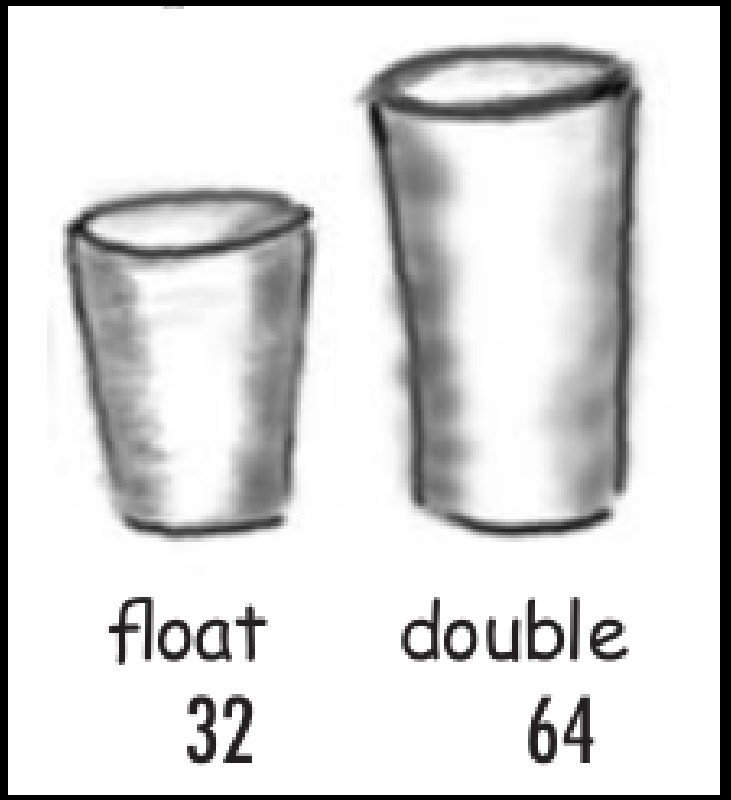



Integers in different flavors!!

Credits: Head First Java

# Numeric Primitives




**char** variable type stores characters

Credits: Head First Java

# Ranges

| Integer Type | No of Bytes | Minimum value that can be stored | Maximum Value that can be stored |
|---|---|---|---|
| short int | 2 | -32,768 | 32,767 |
| int | 4 | -2,147,483,648 | 2,147,483,647 |
| long int | 4 | -2,147,483,648 | 2,147,483,647 |
| long long int | 8 | -9,223,372,036,854,775,807 | 9,223,372,036,854,775,806 |

# Ranges

| Integer Type | No of Bytes | Minimum value that can be stored | Maximum Value that can be stored |
|---|---|---|---|
| float | 4 | 3.4 e -38 | 3.4 e 38 |
| double | 8 | 1.7 e -308 | 1.7 e 308 |
| long double | 12 | 3.4 e - 4932 | 1e+493 |

# Scientific Notation

| | |
|---|---|
| 5.878 | E12 |
| 58.78 | E11 |
| 587.8 | E10 |
| 5878. | E9 |
| 58780. | E8 |
| 587800. | E7 |
| 5878000. | E6 |
| 58780000. | E5 |
| 587800000. | E4 |
| 5878000000. | E3 |
| 58780000000. | E2 |
| 587800000000. | E1 |
| 5878000000000. | E0 |
| 5,878,000,000,000 | |

# Know Your Variables

Variables must have a name

Variables must have a type

# Know Your Variables

Variables must have a name

Variables must have a type

Variables must be declared before their usage

# Declaration & Assignment

```
int x; // variable declarations
int y;
int z;
```

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int y;
int z;
// ways to assign values to variables
x = 12;// direct assignment of literal
       // value to variable
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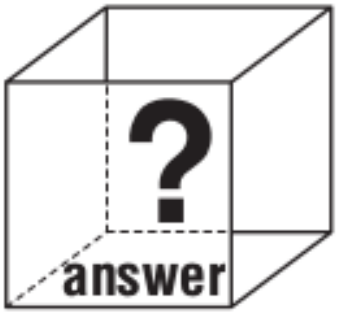
       // to another variable
```

# Declaration & Assignment

```
int x; // variable declarations
int y;
int z;
// ways to assign values to variables
x = 12;// direct assignment of literal
       // value to variable
y = z; // assign value of one variable
       // to another variable
z = x + 43; // thru an expression
```

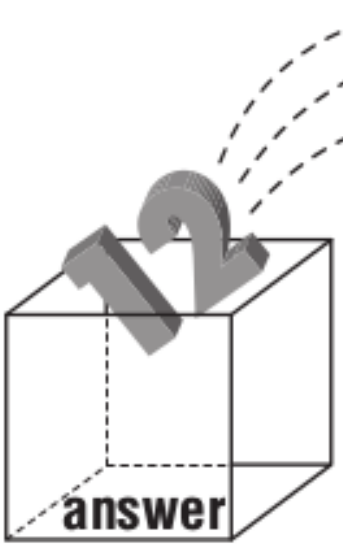
# Declaration & Assignment

**A** `int answer;`




The variable `answer` has not been assigned a value. So we put a "?" in it to indicate that it's in an unknown state.

**B** `answer = (1+2) * 4;`




The variable `answer` is assigned the value of the expression `(1+2)*4`. The box is shown containing the value 12.

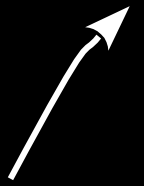
# Printing Variable Value

```
// Did you notice: Simultaneous
// declaration and assignment

// First assignment can also be called
// variable initialization
int height = 6;
```

# Printing Variable Value

```
int height = 6;
// f stands for formatted
// output can be formatted
printf("Height: %d\n", height);
```



What are these?

# Printing Variable Value

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int height = 6;
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printf("Height: %d\n", height);
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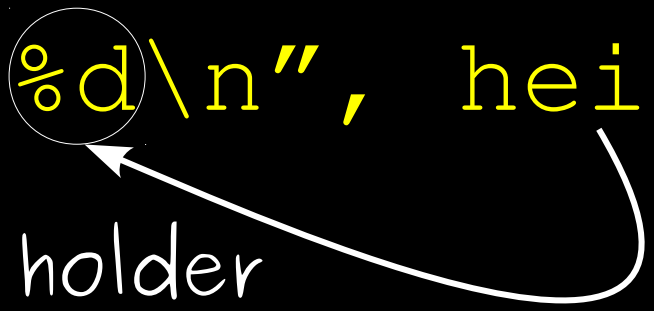
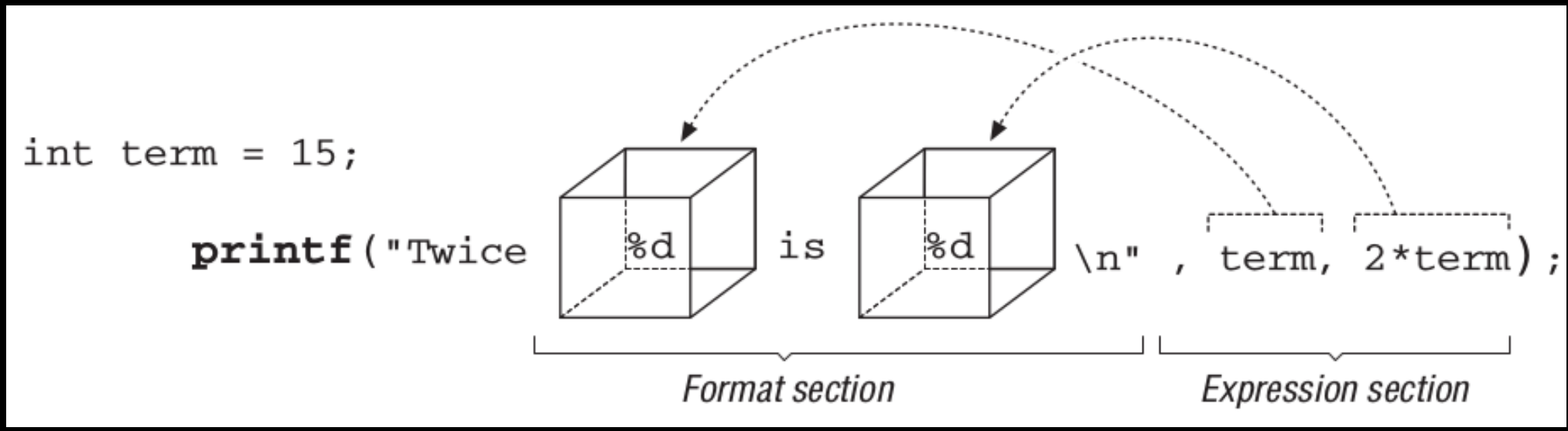


A place holder
It is called a format specifier
d stands for decimal

# Printf Structure




Credits: Practical C Programming

# Printing Variable Value

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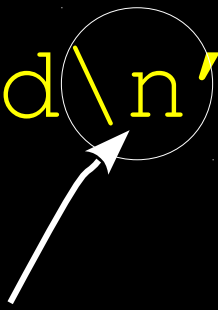

Escape sequence
n stands for newline

# Printf Structure

| | |
|---|---|
| %i or %d | int |
| %c | char |
| %f | float |
| %lf | double |
| %s | string |

| Escape sequence | Description |
|---|---|
| \n | Newline. Position the cursor at the beginning of the next line. |
| \t | Horizontal tab. Move the cursor to the next tab stop. |
| \a | Alert. Produces a sound or visible alert without changing the current cursor position. |
| \\ | Backslash. Insert a backslash character in a string. |
| \" | Double quote. Insert a double-quote character in a string. |

Credits: c.camden.rutgers.edu; Deitel & Deitel

# Reading User Input

## Ofcourse in a variable

```
// The following declaration allocates
// memory enough to accommodate
// an integer and names that location
// as height
int height;
```

# Reading User Input

## Ofcourse in a variable

```
int height;
// while printf is intended for output
// scanf is intended for accepting inputs
scanf("%d", &height);
```

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What is this?

# Reading User Input

## Ofcourse in a variable

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// while printf is intended for output
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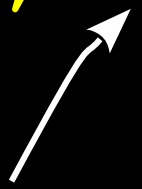

the address of operator

# Reading User Input

## Character

```
int character;
// getchar() is an appropriate choice for
// reading single character
character = getchar();
// putchar() displays the character
putchar(character);
```

# Reading User Input

## String

```
// This declaration says that string is
// a character variable that can hold
// 10 characters!

char string[10];
```

# Reading User Input

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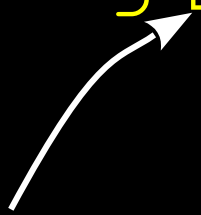

Look at the square brackets - Remember this, it will keep coming where you want to use a collection of data

# Reading User Input

## String

```
// This declaration says that string is
// a character variable that can hold
// 10 characters!

char string[10];
gets(string); // get the string
puts(string); // put the string
```

# 15CSE102
# Computer Programming

(Next Topic)

# A + B = C