Day3 Storing Information

2 ways to store values- variables and constants

variable- data storage location that has a value and can be changed during program execution

constant- fixed value that can't change

Variables

Variable names: + a-z, A-Z, 0-9, _ + 1st character must be a letter + C is canse sensitive + C keywords cannot be used as variables

commonly use lowercase characters in variable names

camel notation- InterestRate as opposed to snake notation interest_rate

Numeric Variables- 2 categories: 1. integer 2. float- more storage space

int and short varaibles may be different certain hardware

variable declaration- *typename varname*; can declare multiple variables of same type on same line ex: int count, number, start;

typedef- changes typename not varname

should always initialize a variable to a known value

= not same in programming- x = 12 really means 12 is assigned to x

be careful to not initialize a variable outside the allowed range compiler/linker may not catch it!

Constants

literal constants

value that is typed directly into source code

literal constant with a decimal is a floating point constant and is represented by C compiler as a double-precision number

floating point constants can also be written in scientific notation + 1.23E2 1.23 times 10 to the 2nd power + 0.85e-4 0.85 times 10 to the -4th power or 0.000085

integer constants can be written in 3 notations: 1. constant starting with any digit other than 0 is interpreted as a decimal integer 2. constant starting with digit 0 is interpreted as an octal integer 3. constant starting with 0x or 0X is hexidecimal

symbolic constants

constant represented by a name (symbol) in program

Ex: const circumfrence = PI * (2 * radius);

(PI and radius initialized elsewhere)

2 ways to define: 1. #define 2. const

#define- does not need ; at end. can be placed anywhere. only usable "below" where they are written

const- cannot be modified. ex: const long debt = 120000, float tax_rate = 0.21;

&to call variable in program

5 rules for allocating size to varaibles: 1. the size of a char is one byte 2. the size of a short is <= size of int 3. size of int <= size of long 4. size of unsigned = size of int 5. size of float <= size of double