BASIC Variables

DECLARATION	ASSIGNMENT

$$\underbrace{String}_{\text{DATA TYPE}} \; \underbrace{myVar}_{\text{NAME}} = \underbrace{\text{"this is a String!"}}_{\text{VALUE}};$$

data types

- DATA TYPES ARE TYPES OF VARIABLES THE COMPUTER WILL STORE IN MEMORY
- DIFFERENT DATA TYPES HAVE DIFFERENT SIZES + PURPOSES
- VARIABLES CAN ONLY HOLD THE SAME TYPE OF DATA TYPE

TYPE	RANGE	DESCRIPTION
byte	0 TO 255	INTEGER
int	-32,768 TO 32,767	INTEGER
long	-2,147,483,648 TO 2,147,483,647	INTEGER
double	$\pm 5.0e-324$ TO $\pm 1.7e308$	DECIMAL
boolean	TRUE OR FALSE	TRUE OR FALSE
char	UNICODE CHARACTERS	CHARACTERS A-Z, a-z + MORE
String	STRING OF CHARACTERS	COMBINATION OF CHARS + SPACES

NOTE ABOUT UNICODE:

THERE ARE 140,000+ UNICODE CHARACTERS, A=65, Z=90, a=97, etc... YOU CAN ASSIGN EITHER THE LETTER OR NUMERIC VALUE.

ASSIGNING VALUES

- EACH DATA TYPE CAN ONLY ACCEPT CERTAIN TYPES OF DATA
  - INTEGER VALUES HAVE TO BE ASSIGNED A WHOLE NUMBER
  - DECIMAL VALUES CAN BE WHOLE NUMBERS BUT WILL STILL HAVE A DECIMAL IN THEM → 12.0
  - BOOLEANS CAN ONLY BE true OR false + ARE LOWER CASE
  - CHARACTERS ACCEPT SINGLE SYMBOLS WITH APOSTROPHES AROUND IT → 'e'; THESE ARE CASE SENSITIVE
  - STRINGS ACCEPTS ANY AMOUNT OF TEXT WITH QUOTATION MARKS AROUND IT → "THIS iS All VaLid!"; THESE ARE CASE SENSITIVE
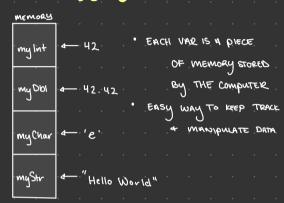
naming convention

- VARIABLE NAMES ARE CASE SENSITIVE
- CANNOT START WITH A NUMBER BUT CAN INCLUDE THEM
- VARIABLES CANNOT INCLUDE SPACES
- VARIABLES WITH MULTIPLE WORDS ARE CAMEL CASED:
  - THIS MEANS THE FIRST WORD IS ALL LOWER CASE + THE FIRST LETTER OF ALL FOLLOWING WORDS ARE CAPITALIZED
  - EX

thisIsCamelCase

how DO THEY WORK?

MEMORY

myInt	← 42
myDbl	← 42.42
myChar	← 'e'
myStr	← "Hello World"

- EACH VAR IS A PIECE OF MEMORY STORED BY THE COMPUTER
- EASY WAY TO KEEP TRACK + MANIPULATE DATA

declaration

- VARS ARE CASE SENSITIVE IN MOST LANGUAGES SO BE AWARE
- DECLARES A SPACE IN MEMORY THE SIZE OF THE DATA TYPE WITH THE VARS NAME
- EX

```
int myInt;  →
```
MEMORY
```
myInt
MAX SIZE:
   32,767
```

— VS —

```
double mydbl;  →
```
```
mydbl
MAX SIZE =
1.7e308
```

assignment
AKA INITIALIZATION

- IF THE VARIABLE HAS ALREADY BEEN DECLARED YOU CAN JUST ASSIGN A CORRESPONDING PIECE OF DATA
- YOU CAN DECLARE + INITIALIZE ALL IN 1 LINE
- EX

```
DataType varName = DATA;
```