

Working with Data

Variables

- Variables are names that refer to a value stored in memory.
- Rules
 - You cannot use one of the Python key words as a variable name
 - A variable name cannot contain spaces
 - First character must be a letter or an underscore
 - After the first character you may use letters, digits, or underscores
 - Uppercase and lowercase characters are distinct.
 - You may use up to 32 characters for a name

Creating Variables

- Variables are used to store data.
- Create a variable by assigning data to it

`my_initial = 'C'`

`gpa = 3.8`

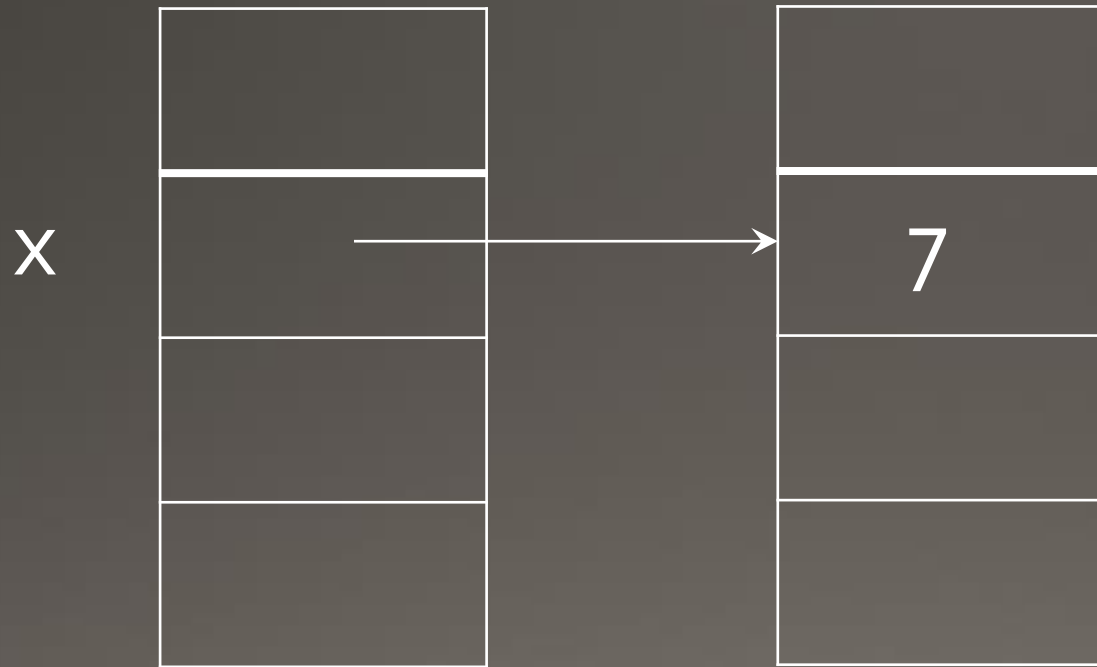
`quote = "Change the world by being yourself"`

`age = 19`

- Always variable = value
- Never value = variable

Memory Model (drawn on board)

$x = 7$

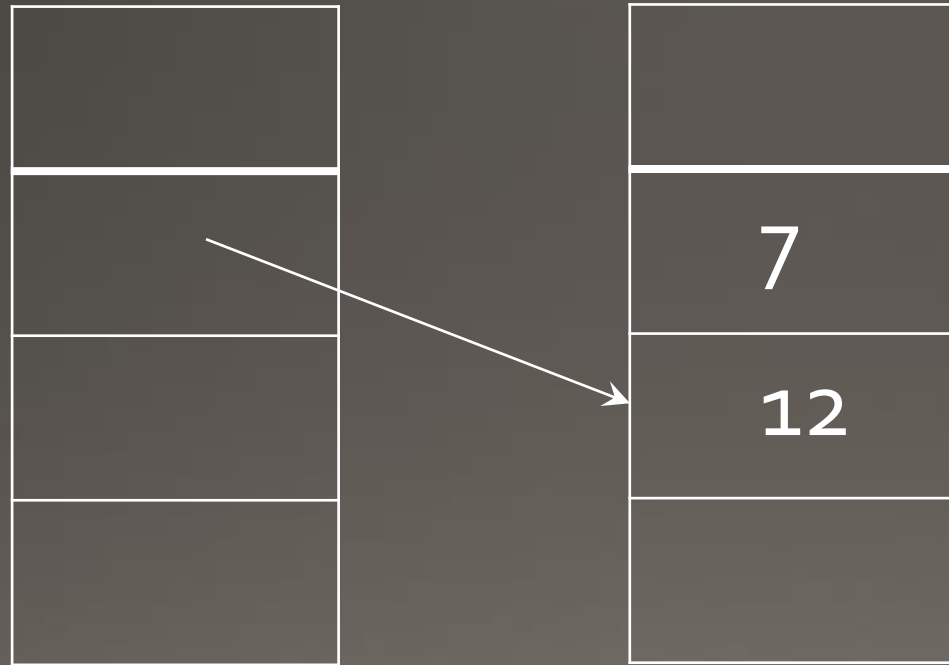


Memory Model (drawn on board)

$x = 7$

$x = 12$

x



Working with character data

- Place text inside quotations ("text") or single quotes('text')
- Characters that don't appear on the keyboard use escape sequences:
- \n – represents a return character
- \t – represents a tab
- \' – represents an apostrophe
- \" – represents a quotation mark
- \\ – represents **ONE** slash

What prints?

- `print("CSE:\nIntroduction to Programming\n")`
- `print("CSE:\tIntroduction to Programming\n")`
- `print("CSE:\\"Introduction to Programming\\"")`
- `print("CSE\\Introduction to Programming\n")`

Data Types

Data Types

- Integers (int)
 - Whole numbers: 1, 2 ,3, etc.
- Floating point (float)
 - Numbers with decimal places: 1.5, 2.0, 3.14159
- String (str)
 - Text
- Boolean (bool)
 - True and False

Data Type of Variable

- Determined by what is stored
- May change during the program

x = "3.0"

x = 3.0

x = 3

Change the data type

- Casting
- `Data_type(value_being_changed)`

```
x = float("3.0")
```

```
y = int(3.0)
```

```
z = str(7)
```