VARIABLES

zyBook 2.1, zyBook 2.2, zyBook 2.3

@ Dr. Jessica Young Schmidt and NCSU Computer Science Faculty

VARIABLE

A variable is a memory location with a name and a type that stores a value.

- For example, a variable year of type int and a value of 2021

year | 2021

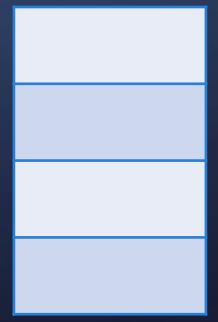
STEPS FOR USING A VARIABLE

1. Declare variable
   - state its name and type
2. Initialize variable
   - store a value into it
3. Use variable
   - print it or use it as part of an expression

DECLARE VARIABLE

You cannot declare the same variable twice. Otherwise, compile errors.

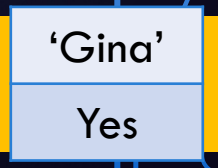
- Variable declaration sets aside memory for storing a value.
- Variable must be declared before it can be used.
- Syntax: <type> <name>; (not yet initialized)
- The name is an identifier. Variable naming convention:
  - Start with lowercase letters.
  - For name containing more than one word, capitalize the first letter of each word except the first.
  - Do not use underscores (_).
    - double height;
      int year;
      char firstName;
      boolean happy;



ASSIGN VALUE TO VARIABLE

- Variable assignment stores a value into a variable.
  - The value can be an expression; the variable stores its result.
- The first time a value is assigned to a variable is also know as initializing the variable.
- Syntax: <name> = expression;
  - read as “name gets expression” OR “name is assigned expression”
  - The “=” sign is the command for assignment.
- You can declare and initialize a variable in a single statement
  - <type> <name> = expression;

```
char firstName = 'Gina';
boolean happy = yes;
```



USE VARIABLE

A variable cannot be used until it is assigned a value. Otherwise, compile errors.

- Once given a value, a variable can be used in expressions:

```
int x = 3;
System.out.println("The value of x is: " + x); // x = 3
```

- You can assign a value more than once:

```
int x = 3;
x = 3 + 4;  // x = 7
```

- You can reassign value based on variable's current value:

```
int x = 3;
x = x + 4; // x = 7
```

The right side expression is evaluated first, and then its result is stored in the variable at left.