Key point: *Variables are used to represent values that may be changed in the program.*

2.5 Variables

```
1  // Compute the first area
2  radius = 1.0;
3  area = radius * radius * 3.14159;
4  System.out.println("The area is " + area + " for radius "+ radius);
5
6  // Compute the second area
7  radius = 2.0;
8  area = radius * radius * 3.14159;
9  System.out.println("The area is " + area + " for radius "+ radius);
```

radius:	1.0
area:	3.14159

radius:	2.0
area:	12.56636

- Variables store values of a particular type. Variables store only one value at a time.
- A type is like a set.
- The variable declaration tells the compiler to allocate storage for the variable based on the type assigned to the variable

  datatype variablename;

- Example declarations:

```
int count;                  //Declare count to be an integer variable
double radius;              //Declare radius to be a double variable
double interestRate;        //Declare interestRate to be a double variable
```

- Variables of the same type can be declared together.

  datatype variable1, variable2, …, variablen;

- Example declarations:

```
int i,j,k;                  //Declare i, j, and k as int variables
```

- Variables can be declared and initialized at the same time.

```
int count = 1;
```

  is the same as

```
int count;
count = 1;
```

- Variables of the same type can be initialized together.

```
int i = 1, j = 2;
```

Tip: A variable must be declared before it can be assigned a value.

Scope: Every variable has a scope. The *scope of a variable* is the part of the program where the variable can be referenced.