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# Introduction to Variables and Types, a little about Objects and I/O

IST 256

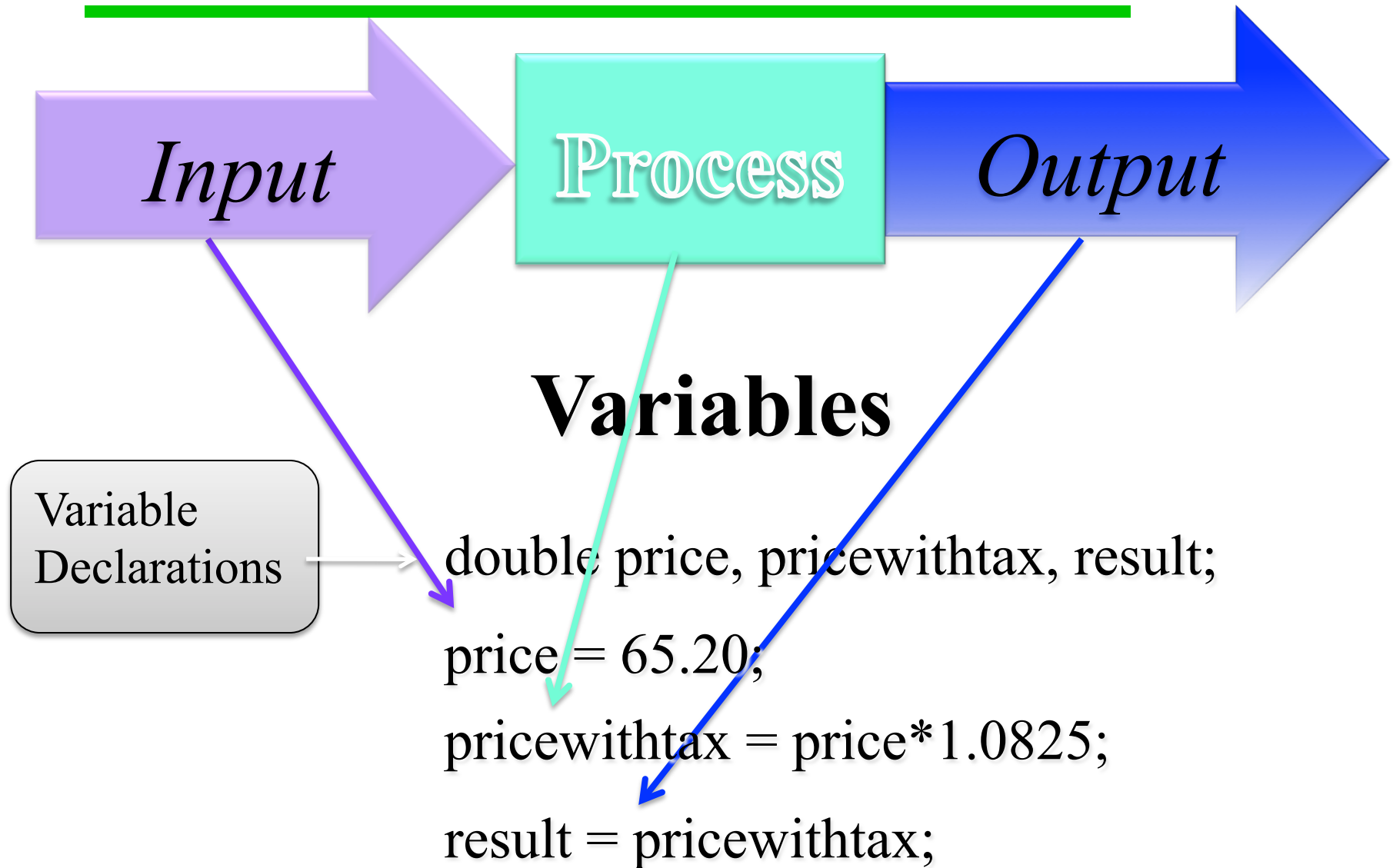
Application Programming for Information Systems

# Information problem...

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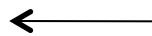


# Memory Model

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- Values in the process are stored in memory.
  - View memory as a sequence of slots that can hold values of different types
- Variables name the slots, sometimes called locations of memory
  - Examples of variable names: price, pricewithtax, result
- Assignment can put values in variables
  - In the memory model, moves the value into the slot for price

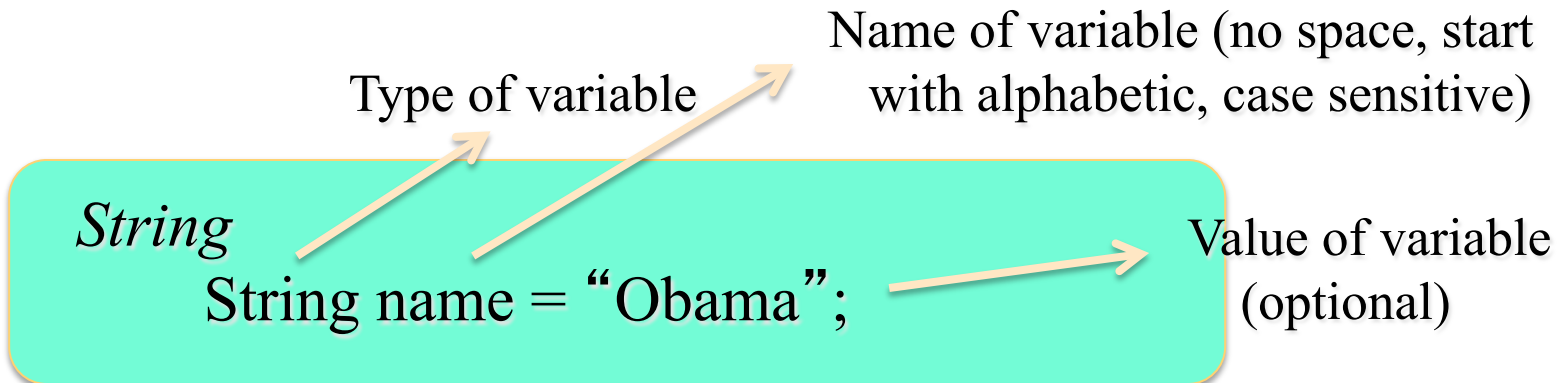
price = value;



In assignment, the value on the right is stored into the variable on the left.

# Variable Declaration (with initial values)

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*int*

```
int age = 30;
```

*double*

```
double price = 15.25;
```

*boolean*

```
boolean dataplan = true; (or false)
```

## Standard arithmetic

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Java supports basic arithmetic operators:

$+$ ,  $-$ ,  $*$ ,  $/$ , and  $\%$ .

Write a program to add 2 numbers:

```
int number1, number2, result;
```

declarations

```
number1 = 18;
```

assignments

```
number2 = 9;
```

of values

```
result = number1 + number2;
```

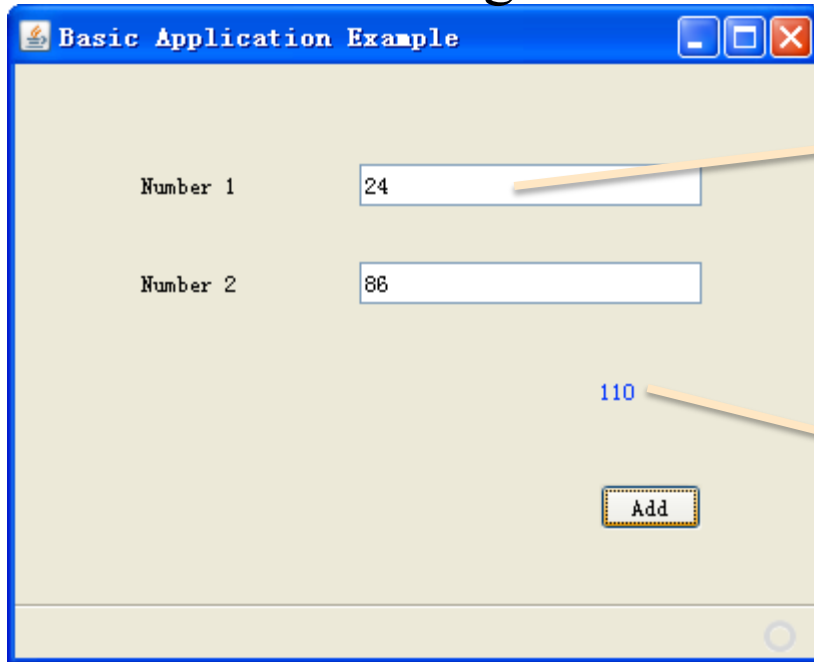
assignment of sum

```
System.out.println(result);
```

print result

This adds two specific numbers, but we need a way to allow the user to type in any numbers.

# Gui Objects (textfields and labels) use functions `getText` and `setText` with Strings



*`jTextField`*

*`jTextField1.getText();`*

*`jLabel`*

*`jLabel3.setText (?????);`*

```
int number1, number2, sum;
```

```
number1 = Integer.parseInt (jTextField1.getText());
```

```
number2 = Integer.parseInt (jTextField2.getText());
```

```
sum = number1 + number2;
```

```
jLabel3.setText(String.valueOf(sum));
```

Order:

First get the text,

Then convert it to an int

# GUI Event Model

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- In lab, we will add our program to add numbers to a GUI.
  - Given a GUI with a button, NetBeans will give us the skeleton of an event program
  - Whatever program we put in the event method will be performed when the user clicks the button

