



Interactive system

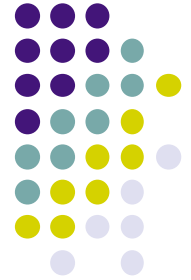
declare

$$X = 1234 * 5678$$

{Browse X}

- Select a region in the Emacs buffer
- Feed the region to the system
 - The text is compiled and executed
- Interactive system can be used as **a powerful calculator** →





Creating variables

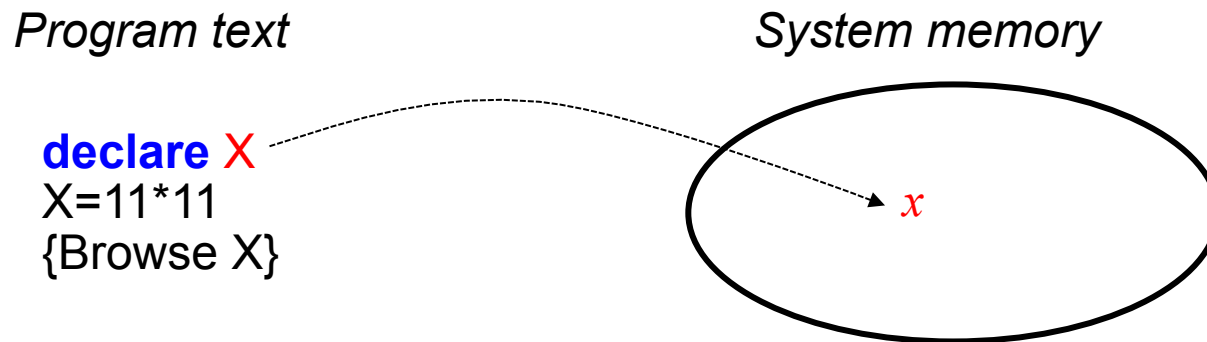
declare

```
X = 1234 * 5678
```

```
{Browse X}
```

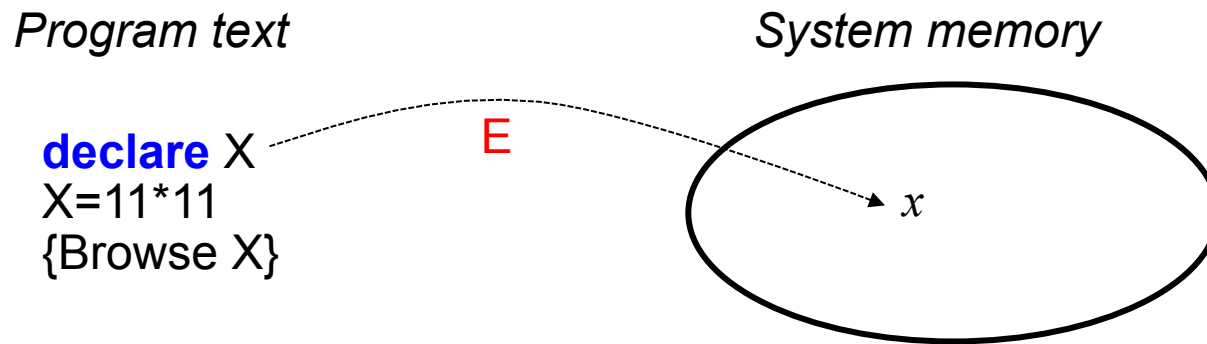
- **Declare** (create) a variable **designated** by X
- **Assign** to the variable the value 7006652
 - Result of the calculation $1234 * 5678$
- **Call** the procedure Browse with the argument designated by X
 - Opens a window that displays 7006652

Variable and identifier



- There are two concepts hiding in plain view here
 - **Identifier X** : what you type (character sequence starting with capital)
Var, A, X123, FirstCapitalBank
 - **Variable x** : what is in memory (used to store the value)
- Variables are short-cuts for values (= constants)
 - Can only be assigned to one value (like [mathematical variables](#))
 - Multiple assignment is another concept! We will see it later in the course.
 - The type of the variable is only known when it is assigned ([dynamic typing](#))

Environment



- **declare** is an interactive instruction
 - Creates a new variable in memory
 - Links the identifier and its corresponding variable
- Third concept: **environment** $E = \{X \rightarrow x\}$
 - A function that takes an identifier and returns a variable: $E(X) = x$
 - Links identifiers and their corresponding variables (and the values they are bound to)