

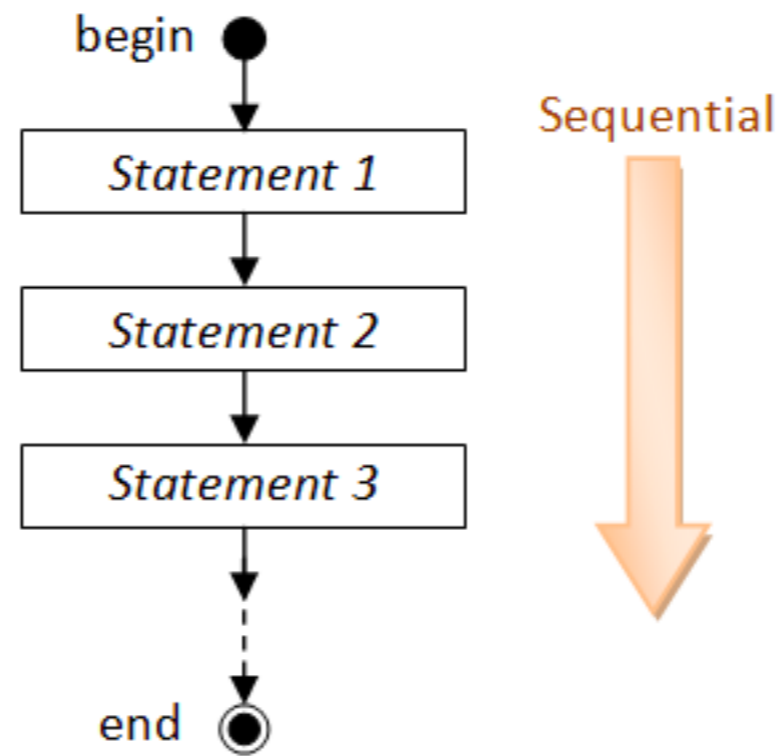
# Creative Computing

Expressions and variables

# Warm-up

- What is a computer program?
- If you don't want to be a programmer, why should you care about writing programs?!
- Why are parameters rad?

# Program



# Parameters

- Flexibility, generalizability
- These are common themes!

# Python math

- + adding or string concatenation
- - subtraction
- / division (CAREFUL: whole number division truncates!)
- \* multiplication or string multiplication
- \*\* exponent

# Order of operation

- Parentheses
- Power
- Multiplication/division
- Addition/subtraction

# Print

- A Python function
  - Display values to the user
  - Literal strings must be in quotes
  - Special characters
    - `\n` for newline
    - `\t` for tab
- ```
print(<value>)  
print(25 * 6)  
print("hello")
```

# Variables

- Store values in memory for later use
- Have a name
- Name must start with letter and can't have spaces (use \_ instead)
- Name should be descriptive

```
dollars_owed = 10  
tax = dollars_owed * .08
```

# Variables

| TYPE  | NAME      | VALUE       |
|-------|-----------|-------------|
| int   | number    | 1           |
| int   | sum       | 500500      |
| float | radius    | 5.5         |
| float | area      | 95.0334     |
| str   | greeting  | "Hello"     |
| str   | statusMsg | "Game over" |

***A variable has a name, stores a value***

# Types

- All values have types
- Simplest types:
  - int - whole numbers
  - float - decimals
  - str - string (multiple characters)

# Printing numbers

- Can't squish together numbers and strings
- Need to use `str()` function

```
>>> print("income: " + str(income))  
income: 90000
```

# User input

- Interactive programs are more fun
- Use the `raw_input()` function
- Result is a string
- We generally print a message first

```
>>> income = raw_input("What is your income?")
```

```
80000
```

```
>>> print(income)
```

```
80000
```

# Math on input

- Careful -- the result is a string!
- We have to use the `int()` function

```
>>> income = raw_input("What is your  
income?")  
>>> taxed = .20 * int(income)  
>>> print(taxed)  
16000.0
```

# Exercise

- Given a person's age, figure out their dating range!
- The minimum age someone can date is determined by  $\text{age} / 2 + 7$
- The maximum age someone can date is determined by  $(\text{age} - 7) * 2$
- Get user input for the age