How to build a program

- **Create a module**
  - Can be used by other modules via import
  - Collection of functions, later collection of classes
  - How do the functions in one module communicate?

- **Sometimes functions in one module interact**
  - Easy if one function calls another
  - Harder if state must be saved between function calls

- **Enter global variables**
  - The scourge of human kind

Global variables

- **Why are these bad?**
  - Leaky information from one module to another
  - If implementation changes, hard to maintain code
  - So, NEVER access global state/variables outside a module
  - Eventually move toward understanding of name spaces

- **When using a global variable you must**
  - Declare the variable as global in a function
  - Not for read-only, don't need to be declared, but just do it

- **Designing and using classes will change this**

Programming Style

- **Functions return a value**
  - If they don’t they do anyway: None
  - Sometimes it’s ok not to, the function has a side effect
  - Could be printing, could be altering global state
  - Could be ...

- **Functions have a comment indicating their purpose**
  - Describe functionality
  - Describe parameters
  - Describe return type
  - Describe exceptions (later)

Lynn Conway

- See Wikipedia and lynnconway.com
- **Joined Xerox Parc in 1973**
  - Revolutionized VLSI design with Carver Mead

- **Joined U. Michigan 1985**
  - Professor and Dean, retired ’98

- **NAE ’89, IEEE Pioneer ’09**

- **Helped invent dynamic scheduling early ’60s IBM**

- **Transgender, fired in ’68**