Welcome to Part II of the course:

Our Goal: Learn to write bridge, bc/dc, webserver
Big Idea: Programming with Programs
Example: The shell allows us to program with programs

The Unix shell is a program that:

a. Executes programs for the user using fork, exec, wait
   - prompts user, accepts input, runs command, wait for exit
b. Can process scripts of commands: programming with programs
   - big example: phonebook1.0
   - features of scripts:
     a. reads command and args, passes args to command
     b. has conditional execution
     c. has variables to store strings
     d. can receive environment variables from caller
     e. can pass environment variables to children

c. Today we add each feature: a-e to a simple shell

a. Reads Commands and Args: Passes Args to Command, Receives Status
   a. should run script1
   b. logic1: read, parse, execute, report
   c. here is smsh1.c

b. Conditional Execution
   a. should run script2
   b. Need: track status and place in control structure -- controlflow.c
   c. logic2: read, parse, check for control cmds, execute if ok
   d. here is smsh2.c

c. Has Variables
   a. should run script3
   b. Need: System to store var=val strings -- varlib.c
   c. logic3: read, parse, check for ctr_cmds cmds, vars, if ok: is builtin, execute
   d. here is smsh3.c

d. Imports Environment
   a. should run script4
   b. Need: Read from environment to variable list
   c. logic4: same as logic3
   d. here is smsh4.c

e. Export Environment
   a. should run script5
   b. Need: Copy from variable list to environment
   c. logic4: same as logic3 except: copy to environ before execvp
   d. here is smsh5.c