Lab 2

Tips, DD, Open OH

Midterm Feedback

https://uw.iasystem.org/survey/278603

closes on 11/3 (next Friday)

please let us know what you think!

Pipe Impl

- a variant of the bounded buffer problem
  - producer = writer, consumer = reader
  - aware of consumer exiting & producer exiting
- when should a writer wait?
  - no room to write and still readers left
  - what about reader wait?
- what should happen when all writers are closed
  - what if there are still readers blocked? what should happen?
  - what if there are new readers coming? what should happen?

exec(program, args): args setup

int main(int argc, char** argv)

argc: The number of elements in argv

argv: An array of strings representing program arguments

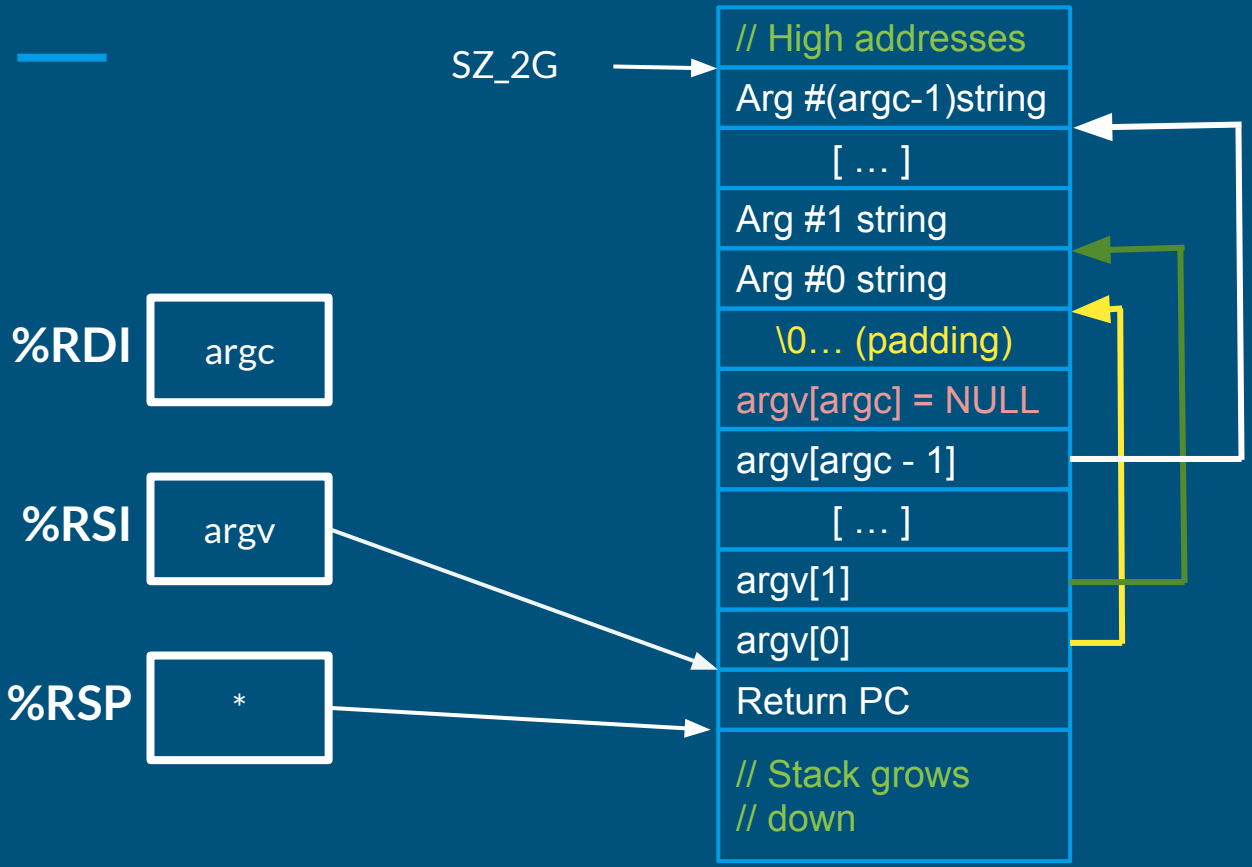
- First is always the name of the program
- Argv[argc] = 0

X86_64 Calling Conventions

- %rdi: holds the first argument
- %rsi: holds the second argument
  - %rdx, %rcx, %r8, %r9 comes next
  - overflows (arg7, arg8 …) onto the stack
- %rsp: points to the top of the stack (lowest address)

- Local variables are stored on the stack
- If an array is an argument, the array contents are stored on the stack and the register contains a pointer to the array’s beginning

Stack For User Process

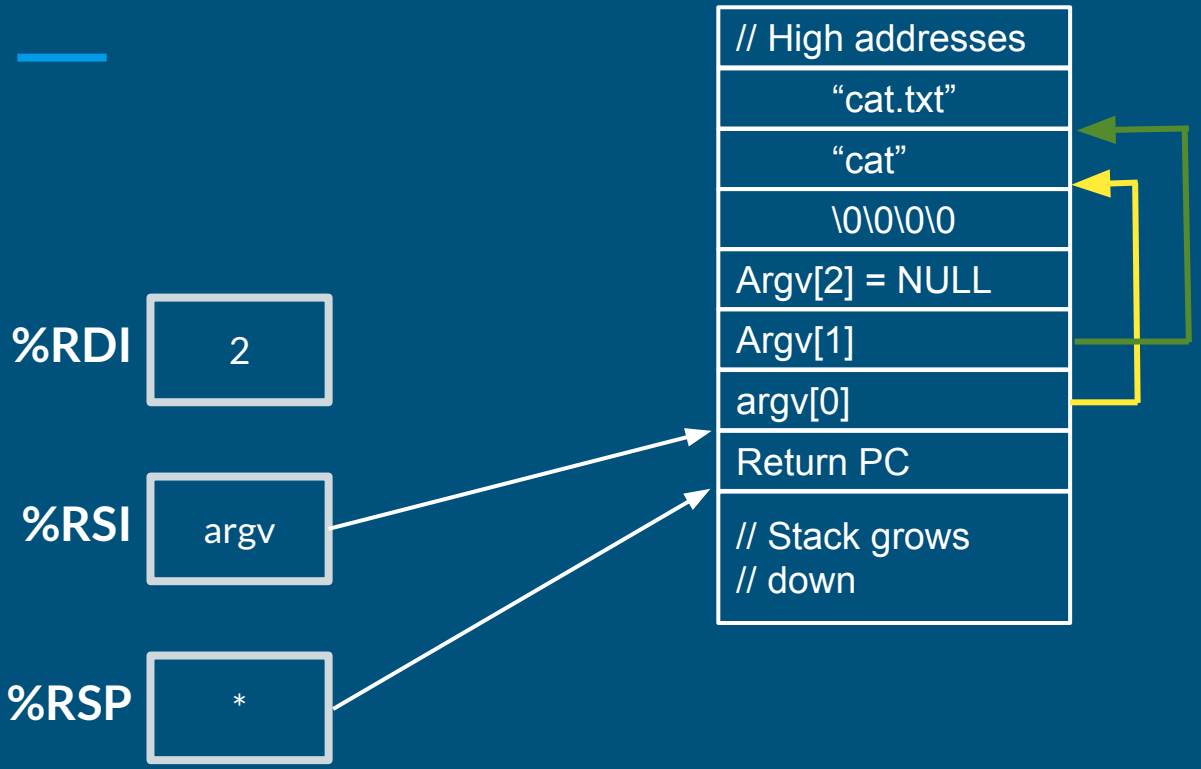


- Since argv is an array of pointers, %RSI points to an array on the stack
- Since each element of argv is a char*, each element points to a string elsewhere on the stack
- Why? Alignment
- Why NULL pointer? Convention

Practice Exercise 1

TODO:
Draw stack layout and determine register values for exec called with "cat cat.txt"

Practice Exercise 1: Solution

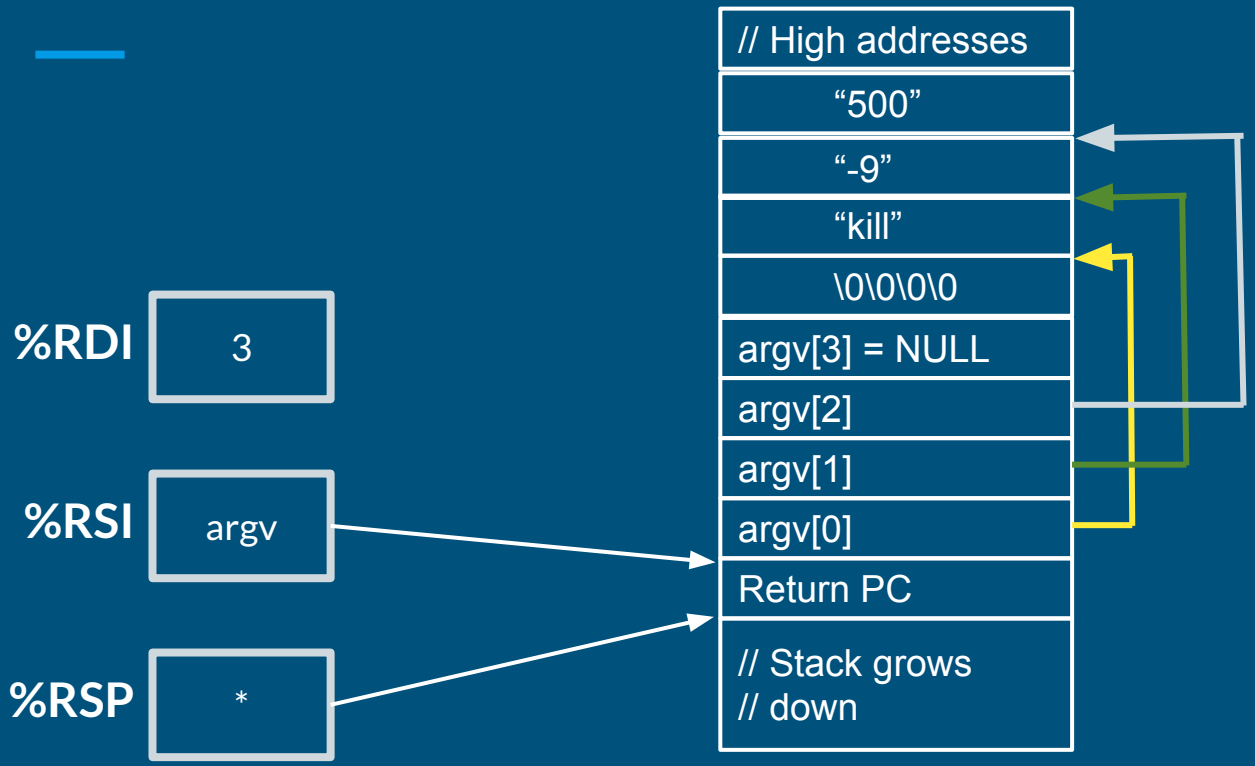


- RDI holds argc, which is 2
- RSI holds argv: the beginning of the argv array
- RSP is properly set to the bottom of the stack.
- The specific value of the return PC doesn’t matter (program exits from main without returning)

Practice Exercise 2

TODO:
Draw stack layout and determine register values for exec called with "kill -9 500"

Practice Exercise 2: Solution



- RDI holds argc, which is 3
- RSI holds argv: the beginning of the argv array
- RSP is properly set to the bottom of the stack.
- The specific value of the return PC doesn't matter (program exits from main without returning)

exec tests

- requires pipe!

Part 2 Design Doc Peer Review (~10 mins)

- Get into groups of 2 and exchange your design docs for peer review
- Did you learn new cases you hadn't thought about?
- Is there anything you can help out for your peers?
- What are some unanswered questions still?

Lab 2 Open OH