

CSC209H Worksheet: Pipe (workers & master)

In last week's worksheet, we wrote a program that forked one child for each command line argument. The child computes the length of the command line argument and exits with that integer as the return value. The parent sums these return codes and reports the total length of all the command line arguments together. For this worksheet, we will write a variation of this program except that each child will communicate the length to the parent through a pipe.

```
int main(int argc, char **argv) {  
    // Declare any new variables you need
```

```
    // Write the code to loop over the command line arguments.  
    for (int i = 1; i < argc; i++) {  
        // Before we call fork, call pipe
```

```
        int result = fork();  
        if (result < 0) {  
            perror("fork");  
            exit(1);  
        } else if (result == 0) { // child process  
            // Child only writes to the pipe, so close reading end
```

```
            // Before we forked, parent had open the reading ends to  
            // all previously forked children; so close those.
```

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```
// Now do the work -- write the value in binary to the pipe
int len = strlen(argv[i]);
```

```
// Close the pipe since we are done with it.
```

```
exit(0); // Don't fork children on next loop iteration
} else {
    // In the parent, but before doing the next loop iteration,
    // close the end of the pipe that we don't want open
```

```
}
```

```
// Only the parent gets here
int sum = 0;
// Read one integer from each child, print it and add to sum
```

```
printf("The length of all the args is %d\n", sum);
return 0;
```

```
}
```