

# CS 3: Introduction to Software Design

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## Debugging Exercises

Name:

### omg.c

```
1 #include <stdio.h>
2
3 int main(int argc, char *argv[]) {
4     if (argc > 1); {
5         for (int i = 0; i < argc; i++) {
6             printf("Argument %d is \"%s\"\n", i, argv[i]);
7         }
8     }
9 }
```

### sigh.c

```
1 #include <stdio.h>
2 #include <math.h>
3
4 float pi(int n) {
5     float result;
6     for (int k = 0; k < n; k++) {
7         result += pow(-1.0/3.0, k)/(2*k + 1);
8     }
9     return sqrt(12) * result;
10 }
11
12 int main(int argc, char *argv[]) {
13     for (int i = 8; i < 15; i++) {
14         printf("pi_{%d} = %f\n", i, pi(i));
15     }
16 }
```

### why.c

```
1 #include <stdio.h>
2
3 int is_prime(int n) {
4     for (int i = 2; i < n; i++) {
5         if (n % i == 0) {
6             return 0;
7         }
8     }
9     return 1;
10 }
11
12 int *primes_to(int n) {
13     int primes[n];
14     int idx = 0;
15     for (int i = 0; i < n; i++) {
16         if (is_prime(i)) {
17             primes[idx++] = i;
18         }
19     }
20 }
```

```

20
21     return primes;
22 }
23
24 const int UPPER = 100;
25
26 int main(int argc, char *argv[]) {
27     printf("beginning\n");
28     int *primes = primes_to(UPPER);
29     for (int i = 0; i < sizeof(primes); i++) {
30         printf("%d ", primes[i]);
31     }
32     printf("end\n");
33 }

```

## fu.c

```

1 #include <stdio.h>
2 #include <stdlib.h>
3 #include <string.h>
4
5 char *concat(char *str1, char *str2) {
6     char *result = calloc((1+strlen(str1) + strlen(str2)),sizeof(char));
7     for (int i = 0; i < strlen(str1); i++) {
8         result[i] = str1[i];
9     }
10    for (int i = strlen(str1); i < strlen(str1) + strlen(str2); i++) {
11        result[i] = str2[i - strlen(str1)];
12    }
13    return result;
14 }
15
16 int main(int argc, char *argv[]) {
17     char *cat;
18
19     cat = concat("hello ", "world!");
20     printf("%s\n", cat);
21
22     cat = concat("abcdefghi", "jklmnopq");
23     printf("%s\n", cat);
24
25     free(cat);
26 }

```