CS241 #02 *See C Crash (part 2) !*

1. Explain how C uses memory from the process address space in each line of the following. (eg. stack, text segment, heap, global). Where do you expect this code to fail?

```
01   int global;
02
03   void test() {
04     char* t1 = "hi"; // Initialize a pointer
05     char t2[] = "abcdefgh"; // copies bytes
06
07     *t2 = 'A';
08     *(t2 + 1) = 'B';
09     t2[1] = 'B';
10     *t1 ='H';
11     t1 = malloc(123);
12   }
```

2. What would you call at line 2 such that p1 can be equal to p2?

```
01   void* p1 = malloc( 10 );

02   ??_____

03   void *p2 = malloc(8);
```

3. What are `asprintf` `sprintf` and `fprintf`?

4. For the start of the program, `main(int argc, char** argv)`

What is special about `argv[0]`

What is special about `argv[argc]`

How do you print out all of the arguments of a program?

```
01   int main(int argc, char** argv) {
02
```

5. Which of the following would print out an address in the stack?

```
01   int abc = 5;
02
03   int main() { f1( 10, &abc); return 0;}
04
05   int f1(int v1, int* v2) {
06       printf("&v1 is %p \n", &v1);
07
08       printf("&v2 is %p \n", &v2);
09
10       printf(" v2 is %p \n",  v2);
11   }
```

6. What are `strcpy, strcat, strlen, strcmp` ?

7. Which of the following is/are incorrect?

```
01   const char* f1() {
02       const char blah[] = "Hello";
03       return blah;
04   }
05
06   const char* f2() {
07       const char* foo = "Hi";
08       return foo;
09   }
10
11   char* f3() {
12       char* yo = malloc(2);
13       strcat(yo, "Hi");
14       return yo;
15   }
```

8. How do I change your variable? Complete the main function to print the message created by the getMessage function

```
01   void getMessage(char**magic) {
02       *magic = malloc(10);
03       strcpy(*magic, "Amazing C!");
04   }
05
06   int main() {
07       char* ptr = NULL;
08        ?
09       puts( _____);
10   }
```