

# UMass Boston CS 240 Test 1 Practice Questions

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By signing, I certify that I have neither given nor received unauthorized assistance on this test.

Signature \_\_\_\_\_

## Instructions

1. **Turn off all digital devices.**
2. One cheat sheet of your own is allowed.
3. Data type storage specification is on first page.
4. Precedence, ASCII and printf reference table are allowed.

## Data Type Specification

- char: 1 byte
- int: 4 bytes
- short: 2 bytes
- long: 8 bytes
- long long: 8 bytes
- float: 4 bytes
- double: 8 bytes
- signed int: is int
- unsigned int: or just unsigned

1. You are `user99`, and your current working directory is `/home/user99/hw3`.

```
/
+-- home
|   +-- ming
|       +-- 240
|           |-- hw1
|               +-- hello.c
|                   |
|                   +-- hw3
|                       |-- itox.c
|                       |-- itox.h
|                       |-- itoxDriver.c
|                       +-- test.txt
+-- user99
|   +-- hw3
|       +-- itoxDriver.c
|       |
|       +-- homework3
|           +-- itoxDriver.c
```

- (a) Copy both `itox.c` and `itox.h` from Ming's directory to your `hw3` directory in one command.
- (b) What is the command to compile `hello.c` into executable `hello.out`
- (c) What is the option that asks the compiler to display all warning messages?
- (d) Delete your `homework3` directory in one command.

(a) `cp /home/ming/240/hw3/{itox.c,itox.h} /home/user99/hw3`

or

`cp /home/ming/240/hw3/itox.c /home/ming/240/hw3/itox.h /home/user99/hw3`

- (b) `gcc -o hello.out hello.c`
- (c) `-Wall`
- (d) `rm -r /home/user99/hw3`

2. Are the following identifiers valid C variable names? If you answer no, explain why.
- (a) `continue`
  - (b) `finished!`
  - (c) `Volatile`
  - (d) `year-2018`
  - (e) `__letMeThink`

3. (a) `int i = -5;`

```
printf("%x", i);
```

What is the output from the `printf` statement and why?

ffffffb

Because negative numbers are stored in their 2's complement form in C. And -5's 2's complement is fffffffb.

(b) Complete this function so that the char array `rev` contains the reversed string of the char array `from`. `rev` and `from` have the same length, of course. Close the braces when you are done.

```
void reverse(char rev[], char from[])
{
    int l=0;
    while (from[l] != '\0')
        l++;
    for (int i = 0; from[i] != '\0'; i++)
        rev[i] = from[l-i-1];
}
```

4. `char msg[] = "\"hello\"\\n\";`

`double x = 8.0;`

`double y = x / 3;`

`printf("%s", msg);`

`printf("%6.3lf\\n", y);`

- (a) (5 points) How many bytes of memory are allocated for `msg`?
- (b) (10 points) What is the output from the two `printf` statements?
- (a) 9 bytes
- (b) "hello"  
2.667

```

5. unsigned char beagle = 0xCC;
   unsigned char pug = 0x44;
   char puggle = beagle / 6 >= 32 || pug - 25 % 10 >> 4;

   printf("beagle = %u, pug = %u\n", beagle, pug);
   if (puggle)
       printf("result = puggle\n");

```

(a) (5 points) Fully parenthesize this expression to reflect the precedence.

```

beagle / 6 >= 32 || pug - 25 % 10 >> 4

```

(b) (10 points) What is the output from the two `printf` statements?

(a) `((beagle / 6) >= 32) || ((pug - (25 % 10)) >> 4)`

```

= (34 >= 32) || (8 >> 4) = 1 || 0 = 1

```

(b) `beagle = 204, pug = 68`  
`result = puggle`

6. Quinary (base-5, pental) numbers.

(a) Convert the decimal number  $345_{10}$  to quinary.

(b) Convert the quinary number  $1324_5$  to decimal.

(c) Add these two quinary numbers in quinary:  $1324_5$  and  $11234_5$ . Show your work.