UMass Boston CS 240 Test 1

March 03, 2020

Name: _____ Student Number: _____

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. (a) (10 points)

```
int main(int argc, char *argv[])
{
    int c;
    while ((c = getchar()) != EOF) ;
    printf("\n%x\n", c);
    return 0;
}
```

Where EOF is a symbolic constant has value of -1.

What would be the output from the `printf` statement when this program reads in the `CompleteShakespeare.txt` and why?

(b) (10 points) Given a string parameter, the following function changes all upper case letters to lower case, and all lower case letters to upper case. Write code to complete the function.

```
void flipCases(char str[]) {
  int i;

  for (i = 0; str[i] != '\0'; i++) {
    if (                                    )  //is str[i] upper case?

      str[i] =                               ; //change to lower case

    else if (                                ) //is str[i] lower case?

      str[i] =                               ; //change to upper case

  }
}
```

2. (20 points) Write a function `rightrot(char s[],int n)` that rotates `s` to the right by n times in place. Write code clearly.
   For example: Rotate "are" to the right by 5 times gives "rea";

3. (20 points)

```
unsigned char beagle = 0x1F;
unsigned char pug = 0x44;
char puggle = beagle << 1 < 32 || pug < 25 / 2 << 2;

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

if (puggle)
  printf("result = puggle\n");
```

(a) (10 points) Fully parenthesize this expression to reflect the precedence.

`beagle << 1 < 32 || pug < 25 / 2 << 2`

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

4. (20 points) Quinary (base-5, pental) numbers.
   (a) (5 points) Convert the decimal number 286_{10} to quinary.
   (b) (5 points) Convert the quinary number 314_5 to decimal.
   (c) (10 points) Convert 127.4375_{10} to binary. Maximum 8 fraction bits without rounding. Show your work.

5. (20 points) Write a program to read from `stdin` line by line, and for each line, remove its trailing blanks and tabs and delete entirely blank lines, then print out the modified line onto screen. Suppose the maximum number of characters of each line is 100.

```
Note: Write neatly.

#include<stdio.h>
#define MAXLINE 100



int main(void)
{
```