EE4144 –Intro to Embedded Design
NYU Tandon School of Engineering
Homework 1

1. Using 8-bit bytes, show how to represent 123. Clearly state the byte values using hexadecimal, and the number of bytes required for each context. Simply indicate the case if the code is not able to represent the information.
    (a) Unsigned integer
    (b) Two's complement
    (c) BCD
    (d) ASCII

2. Using 8-bit bytes, show how to represent -123. Clearly state the byte values using hexadecimal, and the number of bytes required for each context. Simply indicate the case if the code is not able to represent the information.
    (a) Unsigned integer
    (b) Two's complement
    (c) BCD
    (d) ASCII

3. Using 8-bit bytes, show how to represent 56,789. Clearly state the byte values using hexadecimal, and the number of bytes required for each context. Simply indicate the case if the code is not able to represent the information.
    (a) Unsigned integer
    (b) Two's complement
    (c) BCD

4. Using the variable x, give definitions for the following:
    a. An integer
    b. A pointer to an integer
    c. An array of 10 integers
    d. An array of 10 pointers to integers

5. What is the output of the following program:

```c
#include <stdio.h>
int main ()
{
        int vals[5] = {4, 3, 2, 5, 1};
        int i;
        for (i=0; i<=5; i++)
        {
                printf("vals[%d]=%d\n", i, vals[i]);
        }
        return 0;
}
```

6. What is the output to the following program:

```c
#include <stdio.h>
void fun(int y)
{
        y = 30;
}

int main()
{
        int y = 20;
        fun(y);
        printf("%d", y);
        return 0;
}
```

7. What is the output to the following program:

```c
#include <stdio.h>
void fun(int *y)
{
        *y = 30;
}

int main()
{
        int y = 20;
        fun(&y);
        printf("%d", y);
        return 0;
}
```

8. Described the purpose of the keyword "volatile".
9. Describe why it is not a good coding practice to dynamically allocate memory in embedded programming.