



## COMP 2415 – System Programming

### Assignment 4

1. Write out the memory map for the following code, providing all values at the end of execution. What is the exact output produced by this program?

```
#include <stdio.h>
int x;
int Magic(int z)
{
    z=x*3;
    return(z);
}
int main()
{
    int y;
    x=4;
    y=6;
    x=Magic(y);
    printf("%d %d\n",x,y);
}
```

2. Consider the following program:

```
#include <stdio.h>
main()
{
    int a,b,c,d;
    a=0;
    while (1) {
        printf("%d\n",a);
        printf("Input? ");
        scanf("%d",&c);
        if (c == 0) break;
        d=0;
        for (b=1; b<=c; b++)
            if (c%b == 0) d++;
        if (d == 2 || c == 1) a=a+c;
    }
}
```

What does this program do? Rewrite the code, organizing it using sound principles. Include comments and redo variable names and indentation. Use multiple functions, blocks, and/or preprocessing if you deem it necessary.