

Assignment #3

1)

```
#include <stdio.h>
#include <stdlib.h>

double myavg(double db1, double db2, double db3, double db4) {
    return (db1 + db2 + db3 + db4)/4;
}

void main(void)
{
    double avg, w, x, y, z;
    w = 10.0;
    x = 20.0;
    y = 30.0;
    z = 40.0;
    avg = myavg(w,x,y,z);
    printf("The average of %6.2lf, %6.2lf, %6.2lf, and %6.2lf is
           %6.2lf\n", w, x, y, z, avg);
}
```

Output:

```
heechan@heech-laptop:~/Documents/Git/airobotics/Assignment1$ gcc myavg.c -o myavg
heechan@heech-laptop:~/Documents/Git/airobotics/Assignment1$ ./myavg
The average of 10.00, 20.00, 30.00, and 40.00 is 25.00
heechan@heech-laptop:~/Documents/Git/airobotics/Assignment1$
```

2)

```
#include <stdio.h>
#include <stdlib.h>

double myavg(double db1, double db2, double db3, double db4) {
    return (db1 + db2 + db3 + db4)/4;
}

void main(void)
{
    double avg, w, x, y, z;
    printf("Please input a double (w): ");
    scanf("%lf", &w);
    printf("Please input second double (x): ");
    scanf("%lf", &x);
    printf("Please input third double (y): ");
    scanf("%lf", &y);
    printf("Please input fourth double (z): ");
    scanf("%lf", &z);

    avg = myavg(w,x,y,z);

    printf("The average of %6.2lf, %6.2lf, %6.2lf, and %6.2lf is %6.2lf\n", w,
    x, y, z, avg);
}
```

Output:

```
heechan@heech-laptop:~/Documents/Git/airobotics/Assignment1$ gcc avgmain.c -o avgmai
n
heechan@heech-laptop:~/Documents/Git/airobotics/Assignment1$ ./avgmain
Please input a double (w): 12.46
Please input second double (x): 32.67
Please input third double (y): 43.67
Please input fourth double (z): 34.78
The average of 12.46, 32.67, 43.67, and 34.78 is 30.90
heechan@heech-laptop:~/Documents/Git/airobotics/Assignment1$ ./avgmain
Please input a double (w): 53.215
Please input second double (x): 2.45
Please input third double (y): 75.36
Please input fourth double (z): 972.1
The average of 53.22, 2.45, 75.36, and 972.10 is 275.78
heechan@heech-laptop:~/Documents/Git/airobotics/Assignment1$
```

3)

Initial Output:

```
heechan@heech-laptop:~/Documents/Git/airobotics/Assignment1$ gcc scopeoriginal.c -o scopeoriginal
heechan@heech-laptop:~/Documents/Git/airobotics/Assignment1$ ./scopeoriginal
Now in main, value of a is 5
Now in sub1, value of a is 6
heechan@heech-laptop:~/Documents/Git/airobotics/Assignment1$
```

```
#include <stdio.h>
#include <stdlib.h>

void sub1(int a);

void main(void) {
    int a = 5;          /* Switched this line with below */
    sub1(a);
    printf("Now in main, value of a is %d \n", a);
}

void sub1(int a) {
    a = a + 1;
    printf("Now in sub1, value of a is %d \n", a);
}
```

After Change Output:

```
heechan@heech-laptop:~/Documents/Git/airobotics/Assignment1$ gcc scopeoriginal.c -o scopeoriginal
heechan@heech-laptop:~/Documents/Git/airobotics/Assignment1$ ./scopeoriginal
Now in sub1, value of a is 6
Now in main, value of a is 5
heechan@heech-laptop:~/Documents/Git/airobotics/Assignment1$
```

First of all, when calling `sub1`, the method that the main ends up calling is the `sub1()` below of the main – this is interesting because the method above must have been overridden by the method on the bottom. Secondly, the variable names aren't interchangeable within methods (localized variables?) and this is the case with many other programming languages. `a` is initialized as 5, then when calling `sub1(a)`, this just does what it's supposed to do with the number it receives: add 1 and print out 6. Then we get to the `printf` in the main, where `a` is still 5, and we print out 5.

4)

```
#include <stdio.h>
#include <stdlib.h>

void sub1(int a);
void sub2(int a);

void main(void) {
    int a = 5;
    sub1(a);
    printf("Now in main, value of a is %d \n", a);
}

void sub1(int a) {
    a = a + 1;
    printf("Now in sub1, value of a is %d \n", a);
    sub2(a);
    printf("Returned to sub1 (after sub2), value of a is %d \n", a);
}

void sub2(int a) {
    a = a * 2;
    printf("Now in sub2, value of a is %d \n", a);
}
```

Output:

```
heechan@heech-laptop:~/Documents/Git/airobotics/Assignment1$ gcc scope.c -o scope
heechan@heech-laptop:~/Documents/Git/airobotics/Assignment1$ ./scope
Now in sub1, value of a is 6
Now in sub2, value of a is 12
Returned to sub1 (after sub2), value of a is 6
Now in main, value of a is 5
heechan@heech-laptop:~/Documents/Git/airobotics/Assignment1$
```