

ENEE 140, Spring 2014  
Final Exam — Answer Key

**Do Not Make a Copy!!**

1 (16):
2 (6):
3 (5):
4 (15):
5 (10):
6 (10):
7 (18):
8 (20):
TOTAL (100):

### Problem 1. (16 points)

Assignment	Value
<code>float r1 = c/d;</code>	0.5
<code>int r2 = a/d;</code>	0
<code>float r3 = a/d;</code>	0.5
<code>int r4 = (a + 0.2) / b;</code>	0
<code>int r5 = r1 &gt; (float)r2;</code>	1
<code>int r6 = (a - b) &gt; 0;</code>	1
<code>float r7 = ((float)a + b) * 2 / (c + d);</code>	2.0
<code>int r8 = (int)a + (int)c - (int)b - (int)d;</code>	-2
<code>int r9 = 2.0 * a / (c - d);</code>	-2

### Problem 2. (6 points)

In program 1, the main() function sets the global variable a to 2. In program 2, the main() function sets the local variable a to 2.

Output of Program 1:       3  

Output of Program 2:       2  

### Problem 3. (5 points)

```
double x = (double)rand()/((double)RAND_MAX + 1.0);
```

second (double) cast not necessary, 1 instead of 1.0 is also ok.

### Problem 4. (15 points)

```
int temp, i, j;
for(i=0,j=9; i < 5; i++,j--) {
    temp = A[i];
    A[i] = A[j];
    A[j] = temp;
}
```

## Problem 5. (10 points)

Fill in the blank:  $x=0, x<argc$

```
int
main (int argc, char *argv[])
{
    int x;

    printf("argc=%i\n",argc);
    for (x=0; x < argc; x++) {
        printf("argv[%i]=%s\n",x,argv[x]);
    }

    return 0;
}
```

Output:

```
argc=6
argv[0]=a.out
argv[1]=EENE
argv[2]=140
argv[3]=is
argv[4]=the
argv[5]=best!
```

## Problem 6. (10 points)

```
int A[8][8];
int i,j;

for (i = 0; i < 8; i++) {
    for (j = 0; j < 8; j++) {
        if (j % 2 == 0){
            A[i][j] = 1;
        } else {
            A[i][j] = 0;
        }
    }
}
```

## Problem 7. (18 points)

```
#include <stdio.h>

int
main()
{
    FILE *file1, *file2;           // MISSING * on file2 (1)
    int c;                        // SHOULD BE int, NOT char (2)

    file1 = fopen("readme.txt", "r"); // SHOULD BE r NOT w (3)
    file2 = fopen("writeme.txt", "w"); // SHOULD BE w NOT r (4)

    while ((c = getc(file1)) != EOF){ // SHOULD BE != INSTEAD OF == (5)
        fprintf(file2, "%c", c);     // SHOULD BE FILE2 NOT FILE1 (6)
    }

    fclose(file1);
    fclose(file2);

    return 0;
}
```

## Problem 8. (20 points)

Answers

- >
- i
- break
- i

```
int
insert_sorted(int val, int num_sorted, int a[])
{
    int i;

    for (i = num_sorted; i > 0; i--) {
        // Invariant: val >= all elements of a[] seen so far

        if (a[i-1] > val)
            a[i] = a[i-1]; // shift element one position to the right
        else
            break;
    }

    a[i] = val;

    return i;
}
```