

ENEE 140, Spring 2015
Midterm Exam — Answer Key

Do Not Make a Copy!!

1 (14):
2 (24):
3 (5):
4 (15):
5 (12):
6 (10):
7 (20):
TOTAL (100):

Problem 1. (14 points)

1. a is implicitly casted into a float, multiplied by e, and then the result is implicitly casted into an int and assigned to c.
2. a is explicitly casted into a float, and then b is implicitly casted into a float, and then the product is implicitly casted into an int and assigned to c.
3. d is explicitly casted into an int, and then implicitly casted back into a float, and then multiplied by e, and then the result is assigned to f.

Problem 2. (24 points)

Assignment	Value
float r1 = c/d;	0.5
int r2 = a/b;	3
int r3 = a%b;	2
float r4 = a/b;	3.0
int r5 = (c+d) / 2 + 0.5;	2
int r6 = UINT_MAX - 1;	-2
int r7 = (a - r3) % b;	0
int r8 = r3 % b;	2
int r9 = (UINT_MAX % 2 + 1) % 2;	0

Problem 3. (5 points)

Answer:

```
char function1(int i) {  
    char r = 'a'+i-1;  
    return r;  
  
}
```

Problem 4. (15 points)

Answers:

a.

```
for (i = 1; i <= 9; i++) {  
    sum = sum + i;  
    if(i < 9) {  
        printf("%d + ",i);  
    } else {  
        printf("%d = %d",i,sum);  
    }  
}
```

b.

```
i = 1;  
while (i<=9) {  
    sum = sum + i;  
    if(i < 9) {  
        printf("%d + ",i);  
    } else {  
        printf("%d = %d",i,sum);  
    }  
    i++;  
}
```

Problem 5. (12 points)

There are two possible answers:

<pre>#include <stdlib.h> int main() { int i,j; int max; scanf("%d",&max); for(i=0;i<max;i++) { for(j=0;j<=i;j++) { printf("*"); } printf("\n"); } }</pre>	<pre>#include <stdlib.h> int main() { int i,j; int max; scanf("%d",&max); for(i=1;i<=max;i++) { for(j=1;j<=i;j++) { printf("*"); } printf("\n"); } }</pre>
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Problem 6. (10 points)

The answer should be:

```
int x;  
x=rand()%8;    // random number from 0 to 7  
x=2*x+2;      // random even number from 2 to 16
```

OR

```
x = (rand() % 8 + 1) * 2;
```

Problem 7. (20 points)

The correct implementation is listed below:

```

#include <stdio.h>

int day_of_week(int days_since_new_year); // SHOULD BE BEFORE main()
// MISSING ;

int
main()
{
    int days, wd;

    printf ("Enter number of days since January 1, 2015: ");
    scanf("%d", &days);

    wd = day_of_week(days);

    if (wd < 5) { // < INSTEAD OF <=
        printf("Weekday\n");
    } else{
        printf("Weekend\n");
    }

    return 0;
}

// Returns 0 for Monday, 1 for Tuesday, ...
int
day_of_week(int days_since_new_year)
{
    int thursday_offset = 3;
    return (thursday_offset + days_since_new_year) % 7; // MISSING return
// % INSTEAD OF /
}

```