CSE 20211 – Exam 2 – Fall 2011 NAME:
NETID:

Consider the following variable declarations:

```
int a;     char b;    double c;
int *p;    char *q;   double **r;
```

State the **type** of each of the following expressions. (Assume all pointers point to something valid.) If any of these expressions would cause a compile error, explain why in a few words. (10 points)

```
a
```

```
&b
```

```
*q
```

```
p[3]
```

```
*&c
```

```
**p
```

```
p + 5
```

```
**r
```

```
--q
```

```
*c
```

For each of the code fragments below, write what the program displays in the box to the right. (10 points)

`int r=10, s=20, t=30;`
`int *x=&r, *y=&t;`
`int **p=&x;`
 	
`printf("%d %d %d\n",*y,*x,**p);`
 	
`x = &s;`
`*y = 40;`
`**p = 50;`
 	
`printf("%d %d %d\n",r,s,t);`	

`char word[] = "kookaburra";`
`char *p = &word[5];`
 	
`printf("%s\n",p);`
 	
`for(i=0;i<5;i++) {`
`  p[i] = word[i];`
`}`
 	
`printf("%s\n,word);`	

`int mystery( int a, int b, int c )`
`{`
`  printf("%d %d\n",a,b);`
`  if(a>b) return c;`
`  return mystery(a*2,b-1,c+1);`
`}`
 	
`int main( void )`
`{`
`  int n = mystery(1,20,0);`
`  printf("%d\n",n);`
`  return 0;`
`}`	

For each of the following questions, write a **function** that computes the desired result. A good answer can fit in the available space, but use the back of the page if necessary.

Write a **function** that returns the number of vowels found in a string parameter. (5 points)

Write a **function** that compares two strings for near-equality. If the strings are the same length and differ by two or fewer letters, return true. Otherwise, return false. For example, comparing “frog” and “flow” would return true. (5 points)

Write a **program** that does the following: Roll two dice and add their values together. Repeat this process 1000 times. When done, open a file called “dice.txt” for writing, and write out the percentage of times each value was rolled. (10 points)

For example, dice.txt should contain “2 was rolled 2.7% of the time, 3 was rolled 5.8% of the time…”