CSE112 Fall 2004-2005 Second Midterm Examination

1 Evaluating a Polynomial *(40 points)*

Implement the following function:

```
double evaluate_poly(const double *a, int len, double x);
```

The function takes three arguments. The first argument is a pointer to the array of coefficients of a polynomial. The second argument is the length of this array. The third argument is the number at which we wish the calculate the polynomial. The function should calculate and return the following value of the polynomial:

$$P(x) = a_0 x^0 + a_1 x^1 + \cdots + a_n x^n$$

2 Deleting Characters *(40 points)*

Write a C function that takes a string and a single character as arguments, and **deletes** all occurances of the character from the given string. As a result, the string will become shorter, given the character exists in the string. The prototype of the function is:

```
void delete_chars(char *s, char d);
```

So, for instance, if the function is called with the string "Yeditepe" and the character 'e', the string should be modified to become "Yditp".

3 Recursive Function *(20 points)*

Consider this function:

```
int zxcv(int n)
{
  if (n < 3) {
    return 2;
  } else {
    return zxcv(n-1)*zxcv(n-2);
  }
}
```

The function is defined only for values of $n > 0$. (Although the above function will return 2 for $n = 0, n = -1, \ldots$.)

a. Write down the definition of the recursive function, $\mathrm{zxcv}(n)$.

b. Give a non-recursive definition for $\mathrm{zxcv}(n)$, given you can use F_n in the definition, where F_n is the n^{th} Fibonacci number.