Due date: 11:59pm of 4/19 (Tuesday)

In the `main()` function, define a hash table, which is actually an array of lists, each of `class AList` type. The list’s members are integers. The array has 10 slots, from `slot_0` to `slot_9`, where the list in `slot_i` contains any integer `k`, where \( h(k) = i \) and \( h( ) \) is a hash function.

Insert the below array of integers into the hash table using a given candidate hash function, and calculate and print standard deviation of lists’ lengths for this hash function. You can refer to [http://en.wikipedia.org/wiki/Standard_deviation](http://en.wikipedia.org/wiki/Standard_deviation) for how to calculate the standard deviation.

```c
int data_array[]={1237, 1337, 1437, 1537, 1637, 1737, 1837, 1937, 2037, 2137, 2237, 2337, 2437, 2537, 1247, 1347, 1447, 1547, 1647, 1747, 1847, 1947, 2047, 2147, 2247, 2347, 2447, 2547, 1238, 1338, 1438, 1538, 1638, 1738, 1838, 1938, 2038, 2138, 2238, 2338, 2438, 2538, 2237, 2337, 2437, 2537, 2637, 2737, 2837, 2937, 3037, 3137, 3237, 3337, 3437, 3537, 8237, 8337, 8437, 8537, 8637, 8737, 8837, 8937, 9037, 9137, 9237, 9337, 9437, 9537};
```

The candidate hash functions are (1) \( h(k) = k \mod 10 \); (2) \( h(k) = k / 1000 \); (3) mid-square (pick the digit in the middle of the integer’s square), and (4) convert each integer to a string (char *x) and apply the below function:

```c
int h(char* x) {
    int i, sum;
    for (sum=0, i=0; x[i] != '\0'; i++)
        sum += (int) x[i];
    return sum % 10;
}
```

Please zip your entire project, including all directories and files, into one file and submit it via email to sjiang@wayne.edu. Note that this is a bonus homework assignment. You will receive score/credit only if (1) you submit your work before the due time (no late days allowed on this assignment) and (2) you receive a score of 70 or higher.