**WONG KAI YUAN (DC02615-7) CISC1001 (Big assignment)**

#include <stdlib.h>

#include <stdio.h>

#include <time.h>

#include <math.h>

**int** main() {

**double** A[6];

**double** r;

**int** i,j,k;

**double** sum, average ;

**double** max, temp;

srand((**unsigned**)time(**NULL**));

/\*QUESTION 1 : INITIALISE Array\*/

printf ("This is Question 1. Below is the initialised Array : \n");

**for**(i=0; i<6; i++){

r = (**float**) rand()/RAND\_MAX;

A[i] = r ;

}

**for**(i=0; i<6; i++){

printf ("%f\n",A[i]);

}

/\*QUESTION 2 : FIND AVERAGE\*/

printf ("This is Question 2. \n");

sum = 0;

**for**(i=0; i<6; i++){

sum = sum + A[i];

}

average = sum / 6;

printf ("The average of the array is %f.\n", average);

/\*QUESTION 3 : Find furtherest num\*/

printf ("This is Question 3. \n");

max = fabs (A[0] - average);

**for**(i=0; i<6; i++){

temp = fabs (A[i] - average);

**if** (temp > max){

max = temp;

j = i;

}

}

printf ("The furtherest element in array is at index %d\n",j);

/\*QUESTION 4 : REPLACE EXTREAME VALUE\*/

printf ("This is Question 4. Below is the array after replacement. \n");

A[j] = (**float**) rand()/RAND\_MAX;

**for**(i=0; i<6; i++){

printf ("%f\n",A[i]);

}

printf ("This is Question 5. Below is the array after 1000 times of replacement. \n");

/\*QUESTION 5 : REPEAT STEP 2 to 4\*/

**for** (k=0;k<1000;k++){

/\*Step 2\*/

sum = 0;

**for**(i=0; i<6; i++){

sum = sum + A[i];

}

average = sum / 6;

/\*Step 3\*/

max = fabs (A[0] - average);

**for**(i=0; i<6; i++){

temp = fabs (A[i] - average);

**if** (temp > max){

max = temp;

j = i;

}

}

/\*Step 4\*/

A[j] = (**float**) rand()/RAND\_MAX;

}

**for**(i=0; i<6; i++){

printf ("%f\n",A[i]);

}

**return** 0;

}

6) I observed that after 1000 times of replacement, I conjecture that the final outcome of array have similar values (that are about their average). This is because all the values that are furtherest to the average will get replaced, so it will be closer to closer to average.