Homework 6

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// This function check whether an array is a maxheap or not

#include <iostream>

#include <stdio.h>

#include <cstdlib>

bool maxS(int S[], int L[], int C[], int n)

{

int i, j,k, max, pre\_event=0;

max = 0;

int m;

for (i = 0; i<n; i++)

{

if (i == 0)

{

S[i] = 1;

pre\_event = -1;

}

else

{

int O[i] = { };

for (j = 0; j < i; j++)

{

O[j] = -1;

if ((i-j) >= abs(C[i]-C[j]))

O[j] = j;

}

for (j = i; j >0; j--)

{

if (not(O[j-1] == -1))

{

if (max < S[j-1])

{

max = S[j-1];

pre\_event = j-1;

}

}

}

if ((pre\_event == 0) and (not(i == 1)))

pre\_event = -1;

S[i] = max+1;

max = 0;

}

L[i] = pre\_event;

pre\_event = 0;

}

// If must seen an event K at last

int get\_preEvent = 0;

int g = 0;

for (g = n; g>0;g--)

{

for (k = n; k > 0; k--)

{

if (k == g)

{

printf("If event %2i must be seen\n", k-1);

printf("There are %2i events in total can be seen \n", S[k-1]);

get\_preEvent = L[k-1];

if (not(get\_preEvent == -1))

printf("go to Event %2i \n", get\_preEvent);

}

if (k == (get\_preEvent+1))

{

get\_preEvent = L[k-1];

if (not(get\_preEvent == -1))

printf("go to Event %2i \n", get\_preEvent);

}

}

}

return true;

}

/\* Function to print an array \*/

void printArray(int arr[], int size)

{

int i;

for (i=0; i < size; i++)

printf("%4i ", arr[i]);

printf("\n");

}

// Main program to test above functions

int main()

{

// input part

int Event[] = {0, 1, 2,3,4,5,6,7,8,9};

int Coor[] = {0, 1, -4, -1, 4, 5, -4, 6, 7,-2};

int n = sizeof(Event)/sizeof(Event[0]);

int S[n] ={}, i, L[n] ={};

//print out the input data

printf("The input array (event and coordinate ist): \n");

printArray(Event, n);

printArray(Coor, n);

printf("\n");

// call the maxS function

maxS(S, L, Coor, n);

printf("\n");

std::cout << "Maximum number of event can be seen if event (0 to 9) MUST be seen: \n";

for (i = 0; i<n; i++)

printf("%2i ", i);

printf("\n");

for (i = 0; i<n; i++)

printf("%2i ", S[i]);

printf("\n");

printf("\n");

std::cout << "Previous event List to reach maximum number of event can be seen for event (0 to 9):\n";

std::cout << "(-1 value means that event is the starting event)\n";

for (i = 0; i<n; i++)

printf("%2i ", i);

printf("\n");

for (i = 0; i<n; i++)

printf("%2i ", L[i]);

printf("\n");

return 0;

}