[ Ravi Patel ] Instructor: Dr. Hindo

CPSC 230

Chapter 9 - lab assignment- part 1

Due date: end of this class,

Drop in assignment 9 inbox and save your document file as first\_lastname\_ass9.docx

**Q1( 8 pts.) what is the output?**

1. **What do p, q and a represent in this program?**

**int a ;**

**int \*p;**

**int \*\*q;**

**a=40; p=&a, q=&p;**

**cout<< a<< ”\t ”<< \*p<,”\t ”<<\*\*q<<”\t ”;**

**a is an integer with a specific location and a value of 40. p=&a is a pointer to the memory location of a. \*p is a pointer to the value of int a. q=&p is a pointer to pointer p’s memory location. \*\*q is a pointer to pointer p which is a pointer to the value of a. the output is a value of 40 separated by tabs. \* is a pointer to the value, and & is a pointer to the memory location.**

1. **Aarray of Pointers, How do pointer and array related?**

**int a = 1, b = 2, c = 3;**

**int \*p[5];**

**p[0] = &a; p[1] = &b; p[2] = &c;**

**cout << p[0] <<“\t” << p[1] <<“\t” << p[2] <<endl;**

**This is an array of pointers, which reference to the memory location of int a, b, and c. The output would be the memory location of a, b, and c - they are formatted/saved into an array of pointers. You can save memory locations/pointers into an array.**

1. **What is the output?**

**int set[5] = { 15,30,45,60,75 };**

**int \*ptr = set;**

**cout << size(set) << endl;**

**cout << \*ptr << "\t"<< \*set<< endl;**

**for (int q = 0; q<size(set); q++)**

**{**

**cout << \*ptr++ << endl;**

**}**

**20**

**15 15**

**15**

**30**

**45**

**60**

**75**

**32766**

**-1105526642**

**-1080602768**

**-317306592**

**32766**

**1715052821**

**32767**

**0**

**0**

**1**

**0**

**-317306208**

**32766**

**0**

**0**

1. **What is the output? Modify to find the mean of the first diagonal of A[4][4] using pointers. Note: use pointer notation \*(\*(table+i)+j)**

**int table[3][3] = {{1,2,3}, {5,6,7},{9,10,11}};**

**for(int i=0; i<3; i++){**

**for(int j=0; j<3; j++)**

**cout << \*(\*(table+i)+j);**

**cout << endl;**

**}**

**//CPSC 230 RAVI PATEL ASS 9 Q4**

**#include <iostream>**

**using namespace std;**

**int main(int argc, char \*argv[]) {**

**int table[3][3] = {{1,2,3},{5,6,7},{9,10,11}};**

**int sum=0;**

**for(int i=0; i<3; i++){**

**for(int j=0; j<3; j++){**

**sum += \*(\*(table+(i))+(j));**

**cout << \*(\*(table+i)+j);**

**}**

**cout<<endl;**

**//cout<<sum;**

**}**

**cout<<"Mean = "<<sum/9;**

**}**

**SAMPLE OUTPUT:**

**123**

**567**

**91011**

**Mean = 6**

Q2: (7 points) Complete the functions:

// pointers as arguments:

#include <iostream>

using namespace std;

void increment\_all (double\* start, double \* last)

{

// increment the content of array using pointers.

double \* current = start;

// complete here

print\_all (first, last)

}

//---------------------------

void print\_all(double \* first, double \* last)

{

double \* current = first;

while (current != last) {

cout << (\*current++);

if (current != last) cout << ", ";

}

cout << endl;

}

//---------------------------

void normalize ( double \* first, double \* last)

{ //Normalize data

// complete here

print\_all (first, last)

}

void denormalize ( double \* first, double \* last)

{ //DeNormalize data

// complete here

print\_all (first, last)

}

//---------------------------

int main ()

{

// input 30 random numbers (in the range [-100, 100] ) and save them in number [20]

// first represent the address of the first item

increment\_all (first, first+20);

normalize (first ,first+20);

denormalize (first ,first+20);

system (“pause”);

return 0;

}

**Notes:**

**first[ i] = rand() % (b-a+1) + a; // first array is in the range [a, b]**

|  |  |
| --- | --- |
|  | If you want to normalize your data to the range [0,1], you can simply calculate z such that:  zi = (xi−min(x)) / ( max(x)−min(x)))  where x=(x1,...,xn) and zi is now your ith normalized data. As a proof of concept here is the graph of data to illustrate this point:  Denormalisation uses the following formula:  x\*(max(x)−min(x)) + min(x)  enter image description here |

//CPSC 230 RAVI PATEL ASS 9 INCOMPLETE

// pointers as arguments:

#include <iostream>

#include <RANDOM>

using namespace std;

void increment\_all (double\* start, double \* last)

{

// increment the content of array using pointers.

double \* current = start;

while (current != last) {

++(\*current); // increment value pointed

++current; // increment pointer

}

// complete here

print\_all (first, last);

}

//---------------------------

void print\_all(double \* first, double \* last)

{

double \* current = first;

while (current != last) {

cout << (\*current++);

if (current != last) cout << ", ";

}

cout << endl;

}

//---------------------------

void normalize ( double \* first, double \* last)

{

//Normalize data

// complete here

//zi = (xi−min(x)) / ( max(x)−min(x)))

print\_all (first, last);

}

void denormalize ( double \* first, double \* last)

{

//DeNormalize data

// complete here

//x\*(max(x)−min(x)) + min(x)

print\_all (first, last);

}

//---------------------------

int main ()

{

// input 30 random numbers (in the range [-100, 100] ) and save them in number [20]

first[i] = rand() % (b-a+1) + a; // first array is in the range [a, b]

\*first;// first represent the address of the first item

increment\_all (first, first+20);

normalize (first ,first+20);

denormalize (first ,first+20);

return 0;

}