“Heaven’s light is our guide”

**Rajshahi University of Engineering & Technology**

**Department of Computer Science & Engineering**

**Course Title: Object Oriented Programming Sessional**

**Course No: CSE 1204**

Submitted To:

***Rizoan Toufiq***

*Assistant Professor,*

*Dept. of CSE,*

*RUET.*

Submitted By:

***Saifur Rahman***

*Roll No: 1703018*

*Section: ’17-A*

*Class: 1st year (Even Semester)*

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1. **A program that inputs a character from the keyboard and then outputs a large block letter “C” composed of that character. For example, if the user inputs the character “X,” then the output should look as follows:**

X X X  
 X X  
X  
X  
X  
X  
X  
 X X  
 X X X

#include <iostream>

using namespace std;

int main( )

{

int i;

char c;

cout << "Enter a character: ";

cin >> c;

cout << endl;

for(i = 0; i < 5; i++){

if(i < 2)

cout << " ";

else

cout << c;

}

cout << endl;

for(i = 0; i < 5; i++){

if(i == 1 || i == 4)

cout << c;

else

cout << " ";

}

cout << endl;

for(i = 0; i < 5; i++)

cout << c << endl;

for(i = 0; i < 5; i++){

if(i == 1 || i == 4)

cout << c;

else

cout << " ";

}

cout << endl;

for(i = 0; i < 5; i++){

if(i < 2)

cout << " ";

else

cout << c;

}

cout << endl;

return 0;

}

**2. Function: (Call by Value)**

#include <iostream>

using namespace std;

double MarkAsPercentage(int correct, int wrong);

int main( )

{

int n, ca, wa, i = 0, tag;

double marks, mark[100];

double hm = 0, lm = 0, sum = 0, avg;

cout << "No. of students: ";

cin >> n;

cout << endl;

while(n){

cout << "Student no. " << i + 1 << endl;

cout << "No. of questions that answered correctly: ";

cin >> ca;

cout << "No. of incorrect answer: ";

cin >> wa;

marks = MarkAsPercentage(ca, wa);

mark[i] = marks;

i++;

cout << "Obtained Marks: " << marks << endl << endl;

n--;

}

tag = i;

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

if(mark[i] > hm)

hm = mark[i];

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

if(mark[i] < lm)

lm = mark[i];

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

sum += mark[i];

avg = sum / tag;

cout << "Highest marks: " << hm << endl;

cout << "Lowest marks: " << lm << endl;

cout << "Average: " << avg << endl;

return 0;

}

double MarkAsPercentage(int correct, int wrong)

{

double m;

m = (1 \* correct) - (0.25 \*wrong);

if(m < 0)

m = 0;

return m;

}

**3. Function: (Call by Reference)**

#include <iostream>

using namespace std;

void sort(int &a, int &b, int &c);

void swap(int &a, int &b);

int main( )

{

int n1, n2, n3;

cout << "Enter three numbers\n";

cin >> n1 >> n2 >> n3;

cout << "Numbers before sorting\n" << n1 << " " << n2 << " " << n3 <<endl;

sort(n1, n2, n3);

cout << "Numbers after sorting\n" << n1 << " " << n2 << " " << n3 <<endl;

return 0;

}

void sort(int &a, int &b, int &c){

if(a < b)

swap(a, b);

if(a < c)

swap(a, c);

if(b < c)

swap(b, c);

return;

}

void swap(int &a, int &b){

int temp;

temp = a;

a = b;

b = temp;

}

**4. File I/O :**

#include <fstream>

#include <iostream>

using namespace std;

int main( )

{

ifstream in;

ofstream out;

in.open("6.1in.txt");

if(in.fail( )){

cout << "Opening failed\n";

}

out.open("6.1out.txt");

if(out.fail( )){

cout << "Opening failed\n";

}

int a[100], tag, i = 0;

int n1, n2, n3, n4, n5, n6, n7, n8, n9, n0;

n1 = n2 = n3 = n4 = n5 = n6 = n7 = n8 = n9 = n0 = 0;

while(! in.eof( )){

in >> a[i++];

}

tag = i;

for(i = 0; i < tag; i++){

if(a[i] == 0)

n0++;

if(a[i] == 1)

n1++;

if(a[i] == 2)

n2++;

if(a[i] == 3)

n3++;

if(a[i] == 4)

n4++;

if(a[i] == 5)

n5++;

if(a[i] == 6)

n6++;

if(a[i] == 7)

n7++;

if(a[i] == 8)

n8++;

if(a[i] == 9)

n9++;

}

out << "No. of 0 = " << n0 << endl

<< "No. of 1 = " << n1 << endl

<< "No. of 2 = " << n2 << endl

<< "No. of 3 = " << n3 << endl

<< "No. of 4 = " << n4 << endl

<< "No. of 5 = " << n5 << endl

<< "No. of 6 = " << n6 << endl

<< "No. of 7 = " << n7 << endl

<< "No. of 8 = " << n8 << endl

<< "No. of 9 = " << n9 << endl;

in.close( );

out.close( );

cout << "Done\n";

return 0;

}

**5. Array Sorting (Selection sort):**

#include <iostream>

using namespace std;

int main( )

{

int i, j, key, n, count = 0;

int a[100];

cout << "Enter no. of array elements: ";

cin >> n;

cout << "Enter array elements\n";

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

cin >> a[i];

cout << endl;

for(i = 1; i < n; i++){

key = a[i];

j = i - 1;

while(j >= 0 && a[j] > key){

a[j + 1] = a[j];

j--;

count++;

}

a[j + 1] = key;

}

cout << "Sorted Array\n";

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

cout << a[i] << " ";

cout << endl;

cout << "No. of swaps = " << count << endl;

return 0;

}

**6. String: (Palindrome)**

#include <iostream>

#include <string>

using namespace std;

int main( )

{

string s;

int i, n, j, flag = 0;

cin >> s;

n = s.length( );

for(i = 0, j = n - 1; i < n / 2; i++, j--)

if(s[i] != s[j]){

flag = 0;

break;

}

else

flag = 1;

if(flag == 1)

cout << s << " is a palindrome\n";

else

cout << s << " is not a palindrome\n";

return 0;

}

**7. Vector:**

#include <iostream>

#include <vector>

using namespace std;

int main( )

{

vector<int> v;

cout << "Enter a list of positive numbers.\n"

<< "Place a negative number at the end.\n";

int next;

cin >> next;

while (next > 0){

v.push\_back(next);

cout << next << " added. ";

cout << "v.size( ) = " << v.size( ) <<endl;

cin >> next;

}

cout << "\nVector:\n";

for (unsigned int i = 0; i <v.size( ); i++)

cout << v[i] << " ";

cout << endl;

return 0;

}

**8. Dynamic Array & Pointer:**

#include <iostream>

using namespace std;

int main( )

{

typedef double \*avgptr;

int i, sum = 0, n;

double avg;

avgptr a;

cout << "Enter no. of elements: ";

cin >> n;

cout << endl;

a = new double[n];

cout << "Enter numbers\n";

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

cin >> a[i];

cout << endl;

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

sum += a[i];

avg = sum / n;

cout << "Average = " << avg << endl;

delete [ ] a;

return 0;

}