**Programming Fundamentals**

**Assignment1**

Q1) What is the output of the program below:

int g\_arr[5]={5,9};

int main()

{

int arr[5] = {4,9,1};

cout<<arr[2] <<“ “ <<arr[4]<<endl;

cout<<g\_arr[1] <<g\_arr[3];

return 0;

}

Ans1- 1 0

90

Q2) What is the output of the program below:

int main()

{

int arr[5] = {42,19,11};

cout<<arr[5] <<arr[6];

return 0;

}

Ans2- garbage values

Q3) What is the output of the program below:

int main()

{

int y = 1;

switch(y)

{

cout<< “This is C++” <<endl;

case 1:

cout<< “hey”;

break;

case 2:

cout<< “hello”;

break;

}

return 0;

}

Ans3- hey

Q4) What is output of program given below:

int main()

{

unsigned char ch = 255;

while(++ch!=0)

{

cout<<++ch<<" ";

}

return 0;

}

What will be the output if the condition of the while loop is changed to (ch++!=0)

Ans4- i. No Output

ii. Infinite loop

Q5) How many times will “Hello” be printed?

int main()

{

int x;

for (x = -1; x <= 10; ++x)

{

if (x<5)

continue;

else

break;

cout<< “Hello” <<endl;

}

return 0;

}

Ans5- No Output which means 0 times

Q6) What is the output of program below:

int main()

{

intarr[]={2};

cout<< 0[arr]<<endl;

cout<< “hello”+3;

cout<<endl<<“hi\0all”;

cout<<endl << sizeof(5.4);

return 0;

}

Ans6- 2

lo

hi

8

Q7) What is output of below program:

int main()

{

int a[] = {2,3,4};

int b[] = {2,3,4};

if(a==b)

{

cout<< “equal”;

}

else

{

cout<< “unequal”;

}

}

Ans7- unequal

Q8) What is the output of the program given below:

void count()

{

static int count1 = 0;

int count2 = 0;

count1++;

count2++;

cout<< "\nValue of count1 is” << count1,

cout<<“\nValue of count2 is” << count2;

}

int main()

{

count();

count();

count();

return 0;

}

Ans8- Value of count1 is1

Value of count2 is1

Value of count1 is2

Value of count2 is1

Value of count1 is3

Value of count2 is1

Q9) What is the output of the program below:

#define max 5

int main()

{

int i=0;

i=max++;

cout<< i++;

return 0;

}

Ans- Error

Q10) What is the output of the program below:

int main()

{

int a,b;

a=1,3,15;

b=(2,4,6);

cout<<a+b;

return 0;

}

Ans10- 7

Q11) What is the output of the program below:

int main()

{

if(cout<<"C++")

cout<< "programming”;

else

cout<< "Language";

return 0;

}

Ans11- C++programming

Q12) What least positive integer (except 97) could replace the ?in the code below to display ‘a’ on the screen?

int main()

{

char c = ?;

cout<<c;

return 0;

}

Ans12- 65 for capital A

Q13) What is the output of the program below:

int main()

{

int i=2,j=2;

while(i+1?--i:j++)

cout<< i;

return 0;

}

Ans13- 1

Q14) What is output of program below:

int r();

int main()

{

for(r();r();r()) {

cout<< r() <<endl;

}

return 0;

}

int r(){

int static num=7;

return num--;

}

Ans14- 5

2

Q15) Array of 5 integers is to be passed to an a function. Which of these are invalid function prototypes.

* void f(int a[])
* void f(int a[5])
* void f(int a[6])
* void f(int a[2])
* void f(int a[0])
* void f(int a)
* void f(int \*a)

Ans15- void f(int a)

Q16) What is output of below program:

int main()

{

char str[]={'a','b','c'};

char str1[]="abc";

cout << sizeof(str) << endl;

cout << sizeof(str1);

return 0;

}

Ans16- 3

4

Q17) Write a program to display “hello” to the user without using a semicolon anywhere in the code (except for “using namespace std;”).

Ans17-

#include<iostream>

using namespace std;

int main()

{

if(cout<<"hello”)

}

Q18) Write a program to print the pattern below:

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\*\*\*\*

\*\*\*

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\*

Ans18-

#include<iostream>

using namespace std;

int main()

{

int num;

cin>>num;

for(int i=0;i<num;i++)

{

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

{

cout<<" ";

}

for(int k=i;k>0;k--)

{

cout<<"\*";

}

cout<<"\n";

}

for(int i=num;i>0;i--)

{

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

{

cout<<" ";

}

for(int k=0;k<i;k++)

{

cout<<"\*";

}

cout<<"\n";

}

return 0;

}

Q19) Write a program to find whether the year entered by user is a leap year or not.

Ans19-

#include <iostream>

using namespace std;

int main()

{

int year;

cout<<"Enter the year you want to check:- ";

cin>>year;

if (year%4==0)

cout<<"Leap Year";

else

cout<<"Not a Leap Year";

return 0;

}

Q20) Write a program to find if two strings entered by user are anagrams.

Ans20-

#include<iostream>

#include<string.h>

#include<stdio.h>

using namespace std;

int main()

{

int l1,l2;

char str1[100],str2[100];

cout<<"Enter first string: ";

gets(string1);

cout<<"\nEnter second string: ";

gets(string2);

l1=strlen(string1);

l2=strlen(string2);

int c=0;

if(l1!=l2)

{

cout<<"\nNot Anagram";

return 0;

}

else

{

for(int i=0;i<l1;i++)

for(int j=0;j<l2;j++)

if(string1[i]==string2[j])

c++;

}

if(c=l1)

cout<<"\nStrings are Anagram";

else

cout<<"\nTwo strings must have same length";

return 0;

}

Q21) Write a program to display vowels in the string entered by user and the number of times each vowel occurs in the string.

Ans21-

#include<iostream>

using namespace std;

int main()

{

char str[100];

char vow[5]={'a','e','i','o','u'};

int count[5]={0,0,0,0,0};

gets(str);

for(int i=0;str[i]!='\0';i++)

{

switch(str[100])

{

case 'a':

count[0]+=1;

break;

case 'e':

count[1]+=1;

break;

case 'i':

count[2]+=1;

break;

case 'o':

count[3]+=1;

break;

case 'u':

count[4]+=1;

break;

}

}

for(int k=0;k<5;k++)

{

cout<<vow[k]<<"="<<count[k]<<"\n";

}

return 0;

}

Q22) Write a program to add, subtract and multiply two matrices.

Ans22-

#include <stdlib.h>

#include <stdio.h>

using namespace std;

int main()

{

int m, n, p, q;

/\* for dimensions\*/

printf(" Enter dimensions of 1st matrix\n");

scanf("%d%d",&p, &q);

if(!p||!q)

{

printf(" No such matrix exists");

exit(1);

}

printf(" Enter dimensions of 2nd matrix\n");

scanf("%d%d",&m, &n);

if(!m||!n)

{

printf(" No such matrix exists");

exit(1);

}

int a[p][q], b[m][n], prod[p][n], sum[p][q], diff[p][q];

/\* for matrices \*/

printf("\tEnter the elements of 1st matrix row-wise\n");

for(int i=0; i<p; i++)

{

for(int j=0; j<q; j++)

scanf("%d",&a[i][j]);

}

printf("\tEnter the elements of 2nd matrix row-wise\n");

for(int i=0; i<m; i++)

{

for(int j=0; j<n; j++)

scanf("%d",&b[i][j]);

}

/\* for sum \*/

if((m==p)&&(n==q))

{

printf("\nSUM\n");

for(int i=0; i<m; i++)

for(int j=0; j<m; j++)

sum[i][j]=a[i][j]+b[i][j];

for(int i=0; i<m; i++)

{

for(int j=0; j<m; j++)

printf("%5i", sum[i][j]);

printf("\n");

}

}

else

printf("\nAddition of such matrices is not possible\n");

/\* for difference \*/

if((m==p)&&(n==q))

{

printf("\nDIFFERENCE\n");

for(int i=0; i<m; i++)

for(int j=0; j<m; j++)

diff[i][j]=a[i][j]-b[i][j];

for(int i=0; i<m; i++)

{

for(int j=0; j<m; j++)

printf("%5i", diff[i][j]);

printf("\n");

}

}

else

printf("\nSubtraction of such matrices is not possible\n");

/\* for multiplication \*/

if (q==m)

{

printf("\nPRODUCT\n");

for(int i=0; i<p; i++)

{

for(int j=0; j<n; j++)

{

int SUM=0;

for(int k=0; k<q; k++)

{

SUM+=a[i][k]\*b[k][j];

prod[i][j]=SUM;

}

SUM=0;

}

}

for(int i=0; i<p; i++)

{

for(int j=0; j<n; j++)

printf("%5i", prod[i][j]);

printf("\n");

}

}

else

printf("\nMultiplication of such matrices is not possible\n");

return 0;

}

Q23) Write a program to find nth (input n from user) power of the number entered by user without using the already defined pow function in math.h.

Ans23-

#include <iostream>

using namespace std;

int main()

{

int n, pow, Num;

cout<<"Enter a number ";

cin>>n;

Num=n;

cout<<"Enter it's power to be raised to ";

cin>>pow;

for (int i=1; i<pow; i++)

Num=Num\*n;

cout<<n<<" raised to the power "<<pow<<" is "<<Num;

return 0;

}

Q24) Write a program to find the age of a person in years, months and days. Input the person’s DOB and present date, month and year.

Ans24-

#include <stdio.h>

using namespace std;

int main()

{

int d=18, m=10, y=1997, D=18, M=10, Y=2017, dd=0, mm=0, yy=0;

printf("Enter date of birth in the format (dd-mm-yyyy)\n Date : ");

scanf("%d", &d);

printf(" Month : ");

scanf("%d", &m);

printf(" Year : ");

scanf("%d", &y);

printf("\nEnter today's date in the same format (dd-mm-yyyy)\n Date : "); scanf("%d", &D);

printf(" Month : ");

scanf("%d", &M);

printf(" Year : ");

scanf("%d", &Y);

if(Y<y || (Y==y && M<m) || (Y==y && M==m && D<d))

printf("\nWrong Dates. Birth date should be earlier than that of today's date");

else if( m>12 || M>12 )

printf("Invalid Input. A year cannot have more than 12 months");

else if( d>31 || D>31 )

printf("Invalid Input. A month cannot have more than 31 days");

else

{

int month[13] = { 0, 31, 28, 31, 30, 31, 30, 31, 31, 30, 31, 30, 31};

int monthL[13] = { 0, 31, 29, 31, 30, 31, 30, 31, 31, 30, 31, 30, 31};

while(y!=Y)

{

y++;

yy++;

if(d!=D && m>=M && y+1==Y)

break;

}

if(d>D && m==M)

while(m+1!=M)

{

if(d==D && m==M)

break;

m++;

mm++;

if(m==13)

{

m=1;

++y;

}

}

else

while(m!=M)

{

if(d==D && m==M)

break;

m++;

mm++;

if(m==13)

{

m=1;

++y;

}

}

while(d!=D)

{

d++;

dd++;

if(d==month[m]+1)

{

d=1;

++m;

}

}

printf("\n You are :\n%d years, %d months, %d days\n",yy,mm,dd);

}

return 0;

}

Q25) Write a program that replaces each vowel in the text present in a file with the character ‘#’.

Ans25-

#include <iostream>

using namespace std;

int main()

{

char str[100];

gets(str);

for(int i=0; str[i]!='\0'; i++)

str[i]='#';

puts(str);

}

Q26) Write a program that accepts string from user as command line arguments, finds the strings which are palindromes and writes them to a file, separated by new lines. Implementation should be done using subfunctions.

For example if the arguments given by user are: hello hi nitin bye naman, then the program should create a file with the following contents:

nitin

naman

Ans26-

#include <iostream>

#include <cstring>

using namespace std;

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

{

cout<<"The no of arguments passed- "<<argc-1<<"\n";

for(int i=1; i<argc; i++)

cout<<"Argument Number "<<i<<" : "<<argv[i]<<"\n";

for(int i=1; i<argc; i++)

{

char b[25];

char a[25];

int y = strlen(argv[i]);

strcpy(a,argv[i]);

for(int i=0; i<=y; i++)

b[i]=a[y-i-1];

cout << "\n" << i << ". ";

if(!strcmp(a,b))

cout<<"The argument '" << argv[i] << "' is a Palindrome\n" <<endl;

else

cout<<"The argument '" << argv[i] << "' is not a Palindrome\n"<<endl;

}

return 0;

}

Q27) Write a program to concatenate the contents of two files to a third file. For example:

file1 file2

hello all welcome

here

Then file3 must contain

hello all

welcome

here

Ans27-

#include<iostream>

#include<fstream>

#include<string.h>

using namespace std;

int main()

{

char s[20];

ofstream file1;

ofstream file2;

file1.open("temp1.txt");

if(!file1)

{

cout<<"Error opening file";

return 1;

}

cout<<"enter txt to be entered: ";

gets(s);

file1<<s;

file2.open("temp2.txt");

if(!file2)

{

cout<<"Error opening file";

return 1;

}

cout<<"enter text to be entered: ";

gets(s);

file2<<s;

file1.close();

file2.close();

ifstream f1;

f1.open("temp1.txt");

ifstream f2;

f2.open("temp2.txt");

ofstream file3;

file3.open("temp3.txt");

while(!f1.eof())

{

f1>>s;

file3<<s;

}

while(!f2.eof())

{

f2>>s;

file3<<"\n"<<s;

}

f1.close();

f2.close();

file3.close();

return 0;

}

Q28) Write a function that concatenates two integer arrays into a third array in such a way that the smaller size array elements follow the larger one, for example:

Array1: 11,16

Array2: 12,20,34,56,78,90

Target Array3: 12,20,34,56,78,90,11,16

Ans28-

#include <iostream>

using namespace std;

int main()

{

int a, b;

cout<<"Enter size of array 1: ";

cin>>a;

int arr1[a];

cout<<"Enter elements of array 1\n";

for(int i=0; i<a; i++)

cin>>arr1[i];

cout<<"Enter size of array 2: ";

cin>>b;

int arr2[b];

int arr3[a+b];

cout<<"Enter elements of array 2\n";

for(int i=0; i<b; i++)

cin>>arr2[i];

if(a>b)

{

for(int i=0; i<a; i++)

arr3[i]=arr1[i];

for(int i=a; i<(a+b); i++)

arr3[i]=arr2[i-a];

}

else

{

for(int i=0; i<b; i++)

arr3[i]=arr2[i];

for(int i=b; i<(a+b); i++)

arr3[i]=arr1[i-b];

}

cout<<"The concatenated array3 is :\n{ ";

for(int i=0; i<(a+b); i++)

cout<<arr3[i]<<", ";

cout<<"\b\b }";

return 0;

}