# PART A

**1)**Variable names can range from 1 to 255 characters . Must begin with \_ or a alphabet capital or small.Spaces or special characters not allowed.We cannot use c++ keyword as an identifier.

**2)**The largest use void data type is create generic pointers. If we don’t know to what type of datatype the pointer points , we can use these generic pointers. But type casting is required while usage.

Int i=10;

Void \*gp;gp=&I;

Cout<<(int)\*gp;

**3)** An enumeration is a user-defined data type consists of integral constants and each integral constant is give a name. Basically used for creation of symbolic constants.

enum boolean{ false;

true; };

enum boolean check;

**4)**Array is collection of similar homogenous data types;

Ex:-

Char name[100];

Name is array of 100 characters.

Since an array is derived from the primitive data types , it is known as derived data type .

**5)**In C++ a variable can be declared anywhere in the scope of the program. This feature is highly beneficial as at the time of writing the program , we don’t know how many variables can gonna be necessary , hence during the middle of the program , the declaration of new variables is helpful.

:: scope resolution operator can be used to access the global definition of a variable .

**6)**A reference variable provides an alias ( alternative name ) for a previously defined variable .

Its major use is in call by reference mechanism and return by reference mechanism , with these mechanisms the original data might be differed by other functions.

Ex:

Int &x=a;

Both x,a are hold the same address . or both are one and the same.

**7)**class

Public

Private

Inline

Namespace

New

Delete

**8)**

:: scope resolution operator

It is used to define a member function of a class outside the class.

It is used to access the global version of a variable.

**9)**

new is an operator whereas malloc()is function hence saves time.

There is no type casting required in new , where as in (int \*)malloc() type casting is required since it returns a void pointer.

Syntax of new is rather easier.

Int \*p=new int;

**10)**

char \* const p;

this is a constant pointer , which means the address pointed by the pointer cannot be changed .

but the value at address can be changed .

that implies

char ch;

p=&ch; //illegal

\*p=’x’; //legal

char const \*p;

this is a pointer to a constant ,which means the address pointed by the pointer can changed but not the value at address.

That implies

Char ch;

P=&ch ; //legal

\*p=’x’; //illegal

## PART B

**3.1)**

ALGORITHM:-

1)read two numbers

2)call the function swap

3)print the values after swap

Function:-

void swap(int &x,int &y)

{

int t=x;

x=y;

y=t;

}

Return type is void.

Takes two parameters as reference variables.

/\*Function program to swap the values of a pair of integers using reference variables. Developed by Sekhar Karedla of BE ¼ CSE-2, CBIT \*/

#include<iostream>

using namespace std;

void swap(int &x,int &y) //function defination

{

int t=x;

x=y;

y=t;

}

int main()

{

cout<<"enter two numbers : "; //reading numbers

int a,b;

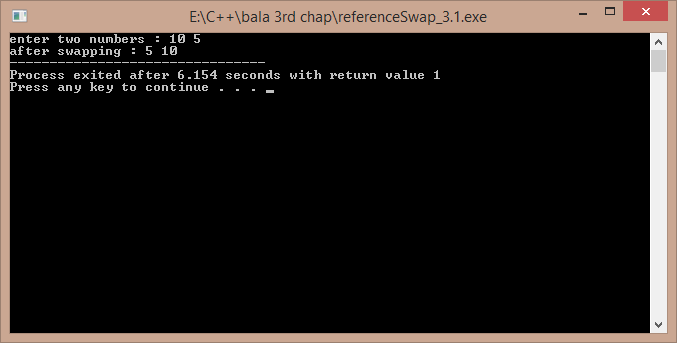
cin>>a>>b;

swap(a,b);

cout<<"after swapping : "<<a<<" "<<b; //displaying numbers

return 1;

}



**3.2)**

ALGORITHM:-

1)read the size of vector from the user

2)create the vector using new operator

3)display the default values so as to show the created vector

/\*A program to create a vector of size as demanded by the user , Developed by Sekhar Karedla BE ¼ CSE-2,CBIT\*/

#include<iostream>

using namespace std;

int main()

{

int m,i;

cout<<"enter the size of vector : ";

cin>>m; //reading size

int \*p=new int[m]; //creating the vector

cout<<"the garbage values are : \n";

for(i=0;i<m;i++) //displaying the garbage values

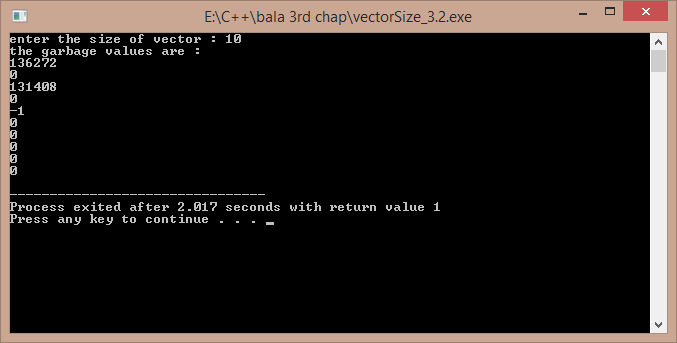
{

cout<<p[i]<<"\n";

}

return 1;

}



**3.3)**

ALGORITHM:-

1)start

2)read the number of lines from user

3)use two for loops to get the pattern

4)end

/\*A program to display the following pattern

1

22

333

4444

55555

……

, Developed by Sekhar Karedla BE ¼ CSE-2,CBIT\*/

#include<iostream>

using namespace std;

int main()

{

int i,j,m;

cout<<"enter the no of lines : ";

cin>>m;

for(i=1;i<=m;i++)

{

for(j=1;j<=i;j++)

{

cout<<i;

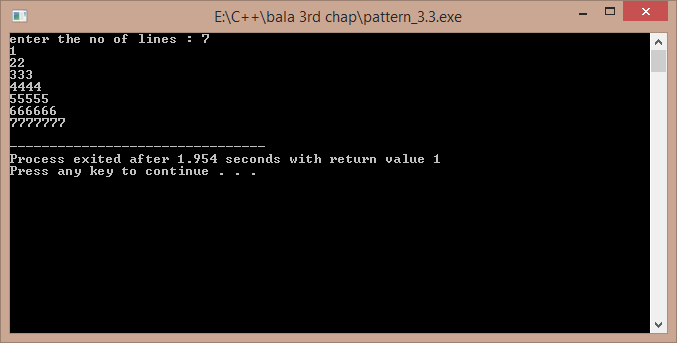
}

cout<<"\n";

}

return 1;

}



**3.4)**

ALGORITHM:-

1)start

2)take all the values in float

3)create three loops , one for the increment of p , one for r , one for n (nested loops)

4) calculate the value of v in each case using pow function under cmath header file

5)store the obtained data in a file so as for the convenience of the user to display the output

Mainly using fprintf() function.

6)end

/\*A program to develop the results of the investment equation v=(1+p)^n. Developed by Sekhar Karedla BE ¼ CSE-2,CBIT\*/

#include<iostream>

#include<cmath>

using namespace std;

int main()

{

float p,v,n,r;FILE \*fp;char ch;

fp=fopen("result3.4.txt","w"); //opening a file

fputs("3.4 PROBLEM REULTS \n ---------------------------------------------------------------- \n",fp); //to initiate with the file some basic borders

fputs("P\t\tr\t\tn\t\t\tV\n",fp);

for(p=1000;p<=10000;p=p+1000)

{

for(r=0.10;r<=0.21;r=r+0.01)

{

for(n=1;n<=10;n++)

{

v=p\*(pow((1+r),n)); //calculating v and storing in file the next line

fprintf(fp,"\n%f\t%f\t%f\t\t%f",p,r,n,v);

}

}

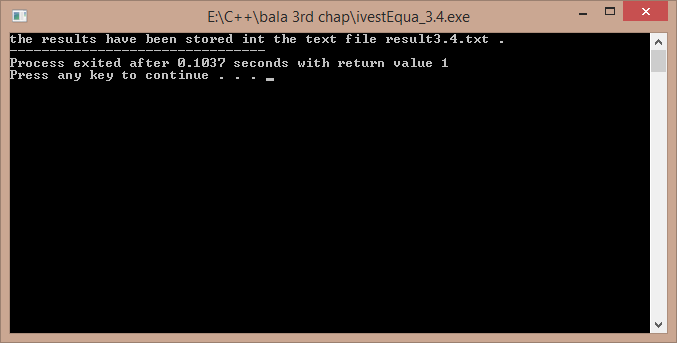
}

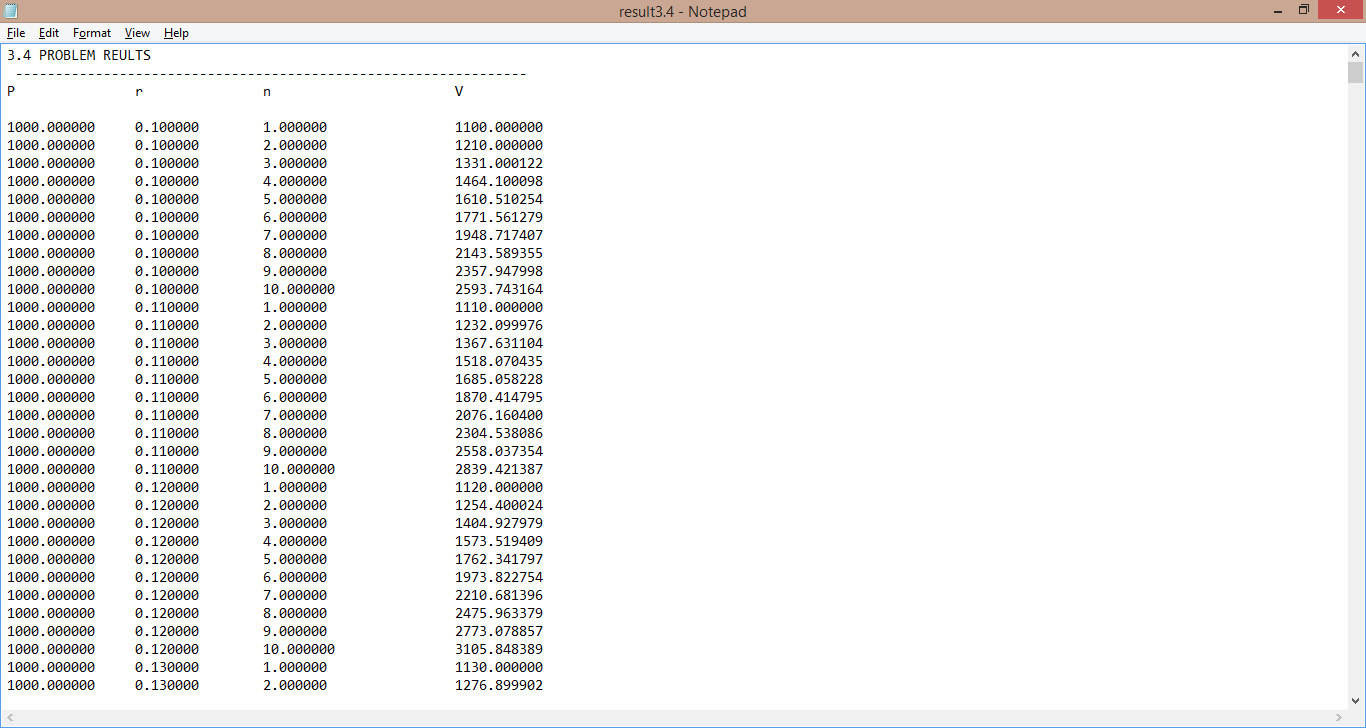
fclose(fp);

cout<<"the results have been stored int the text file result3.4.txt .";

return 1;

}





***THE CONTENTS OF THE FILE(RESULT3.4.txt) ARE:-***

3.4 PROBLEM REULTS

----------------------------------------------------------------

P r n V

1000.000000 0.100000 1.000000 1100.000000

1000.000000 0.100000 2.000000 1210.000000

1000.000000 0.100000 3.000000 1331.000122

1000.000000 0.100000 4.000000 1464.100098

1000.000000 0.100000 5.000000 1610.510254

1000.000000 0.100000 6.000000 1771.561279

1000.000000 0.100000 7.000000 1948.717407

1000.000000 0.100000 8.000000 2143.589355

1000.000000 0.100000 9.000000 2357.947998

1000.000000 0.100000 10.000000 2593.743164

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8000.000000 0.180000 3.000000 13144.258789

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10000.000000 0.150000 4.000000 17490.060547

10000.000000 0.150000 5.000000 20113.570312

10000.000000 0.150000 6.000000 23130.605469

10000.000000 0.150000 7.000000 26600.193359

10000.000000 0.150000 8.000000 30590.224609

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10000.000000 0.170000 5.000000 21924.488281

10000.000000 0.170000 6.000000 25651.652344

10000.000000 0.170000 7.000000 30012.435547

10000.000000 0.170000 8.000000 35114.550781

10000.000000 0.170000 9.000000 41084.027344

10000.000000 0.170000 10.000000 48068.312500

10000.000000 0.180000 1.000000 11800.000977

10000.000000 0.180000 2.000000 13924.000977

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10000.000000 0.180000 5.000000 22877.583984

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**3.5)**

ALGORITHM:-

1)start

2)read the number of ballots from the user

3)create an array on the ballots , using new operator

4)enter the result of each ballot using a for loop

5)calculate the result and spoilt ballots using again a for loop

6)display the results

7)end

/\* A program to calculate the results of an election , . Developed by Sekhar Karedla BE ¼ CSE-2,CBIT\*/

#include<iostream>

using namespace std;

int main()

{

cout<<"enter the no of ballots : "; //reading the number of ballots

static int n,i,r[6]; //static declaration so as get the results array to 0

cin>>n;

int \*p=new int[n];

cout<<"enter the results of ballot : \n";

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

{

cin>>p[i];

if(p[i]>0&&p[i]<6) //reading the results of ballots as well as calculating the results

{

r[p[i]-1]++;

}

else

r[5]++;

}

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

{

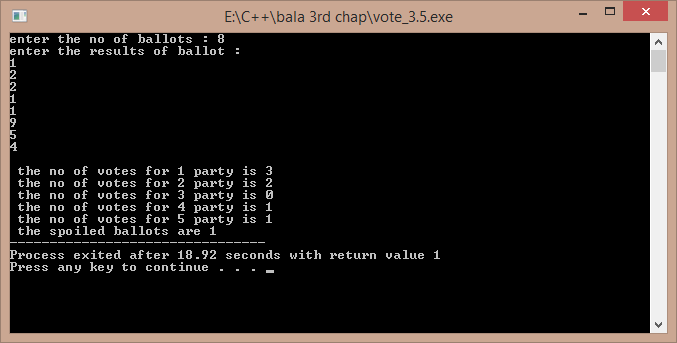
cout<<"\n the no of votes for "<<i+1<<" party is "<<r[i];

}

cout<<"\n the spoiled ballots are "<<r[5];

return 1;

}



**3.6)**

ALGORITHM:-

1)start

2)create a class which contains the data related to a player and functions

3)create a pointer in the main function to create a array of objects using new operator

4)input the values for each object and print them in a tabular form with the batting average

5)end

/\*A program to tabulate the details of the cricket player with the batting average. Developed by Sekhar Karedla BE ¼ CSE-2,CBIT\*/

#include<iostream>

using namespace std;

class player

{

char name[100];

int runs;

int inn;

int t;

float avg;

public:

void getdata();

void display();

};

void player::getdata()

{

cout<<"enter name : ";

cin>>name;

cout<<"enter runs , innings , times not out : ";

cin>>runs>>inn>>t;

}

void player::display()

{

avg=float(1.0\*runs/(inn-t));

cout<<name<<"\t\t"<<runs<<"\t"<<inn<<"\t"<<t<<"\t\t"<<avg<<"\n";

}

int main()

{

int n,i;

cout<<"\nenter the number of players : ";

cin>>n;

player \*p=new player[n];

cout<<"enter the details of "<<n<<" players : \n";

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

{

p[i].getdata();

}

cout<<"PLAYER NAME\t"<<"RUNS\t"<<"INNINGS\t"<<"TIMES NOT OUT\t"<<"AVERAGE\n";

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

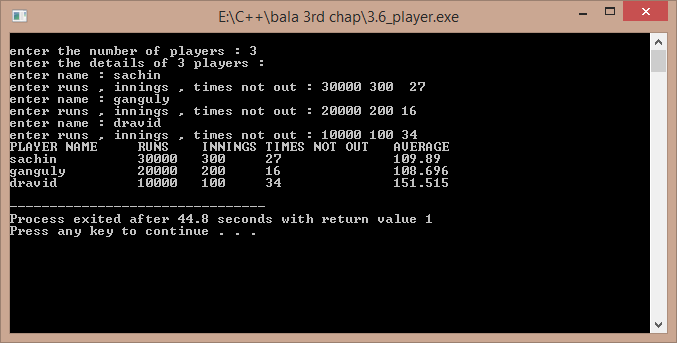
{

p[i].display();

}

return 1;

}



**3.7)a)**

ALGORITHM:-

1)start

2)calculate the original value of sinx using cmath header file

3)calculate the sinx value obtained by eulers expansion

4)find the error and compare

5)end

/\*A program to compare the original and obtained value of sinx , Developed by Sekhar Karedla CSE-2 BE ¼ ,CBIT\*/

#include<iostream>

#include<math.h>

using namespace std;

int main()

{

long double s,t,x,i,j,n;

cout<<"enter x in degrees : "; //reading the degress

cin>>x;

x=x\*(3.141/180);

for(j=3;j<1000;j++)

{s=0;t=x;

for(i=2;i<=j;i++)

{

s=s+t;

t=t\*-1\*x\*x/(2\*(i-1)\*(2\*i-1)); //calculating sinx from euler formula

}

if(((s-sin(x))>-0.00000001)&&(s-sin(x))<0.00000001)

{

cout.precision(10);

cout<<"\nthe original value of sinx is : "<<sin(x);

cout<<"\nthe obtained value of sinx is : "<<s;

cout<<"\nthe order is : "<<j;

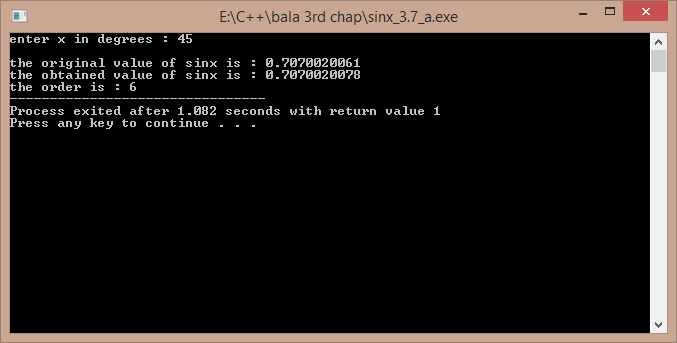
break;

}

}

return 1;

}



**3.7)b)**

ALGORITHM:-

1)reading the value of x from the user

2)calculating the sum using for loops

3)displaying the result

/\*A program to calculate the sum of particular sequence , Developed by Sekhar Karedla CSE-2 BE ¼ ,CBIT\*/

#include<iostream>

using namespace std;

int main()

{

float s,k,p,i,j,n,t;t=1;

cout<<"enter N : ";

cin>>n;p=1;

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

{s=s+p;t=1;

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

{

t=t\*(1/(i+1));

}

p=t;

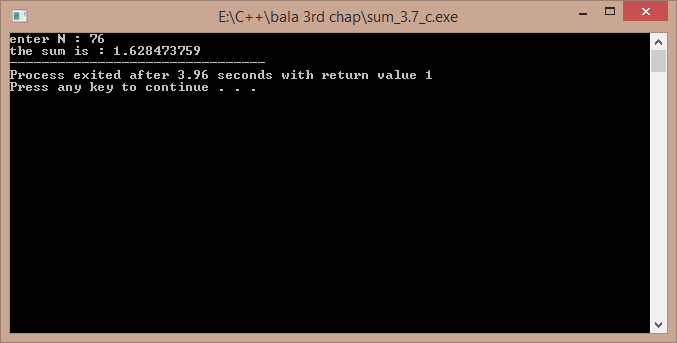
}

cout.precision(10);

cout<<"the sum is : "<<s;

return 1;

}



**3.7)c)**

ALGORITHM:-

1)start

2)calculate the original value of cosx using cmath header file

3)calculate the cosx value obtained by eulers expansion

4)find the error and compare

5)end

/\*A program to compare the original and obtained value of cosx , Developed by Sekhar Karedla CSE-2 BE ¼ ,CBIT\*/

#include<iostream>

#include<math.h>

using namespace std;

int main()

{

float x,t,s,i,j;

cout<<"enter x in degrees : ";

cin>>x;

x=x\*(3.141/180);

for(j=0;j<1000;j++)

{

s=1;t=-(x\*x)/2;

for(i=0;i<=j;i=i+2)

{

s=s+t;

t=t\*-1\*x\*x/((i+3)\*(i+4));

}

if(((s-cos(x))>-0.000001)&&((s-cos(x)<0.000001)))

{

cout.precision(10);

cout<<"\n the original value : "<<cos(x);

cout<<"\n the obtained value : "<<s;

cout<<"\n order : "<<j;

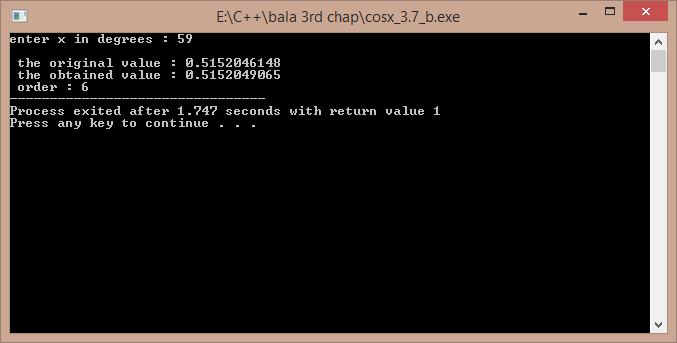
break;

}

}

return 1;

}



**3.8)**

ALGORITHM:-

1)start

2)we use two for loops for proper alignment

3)we store the results again in a file because viewing the results in the command prompt will cause the failure of alignment

4)we calculate the exp(-x) value for 0.1 increment

5)we store the values in a file

6)end

/\*A program developed to show the results of exp(-x) in tabular form , Developed by Sekhar Karedla CSE-2 BE ¼ ,CBIT\*/

#include<iostream>

#include<cmath>

using namespace std;

int main()

{

float i,j;float r;FILE \*fp;int k;

fp=fopen("result3.8.txt","w"); //opening a file

fprintf(fp,"X");

fseek(fp,1,SEEK\_SET);

for(i=0.1;i<=1.0;i=i+0.1) // setting the table headings

fprintf(fp,"\t%f",i);

for(i=0.0;i<10.0;i=i+1.0)

{k=i;

fprintf(fp,"\n%d",k);

for(j=i+0.1;j<=i+0.9;j=j+0.1)

{

r=exp(-j);

fprintf(fp,"\t%f",r); // using fprintf to store the values in a file.

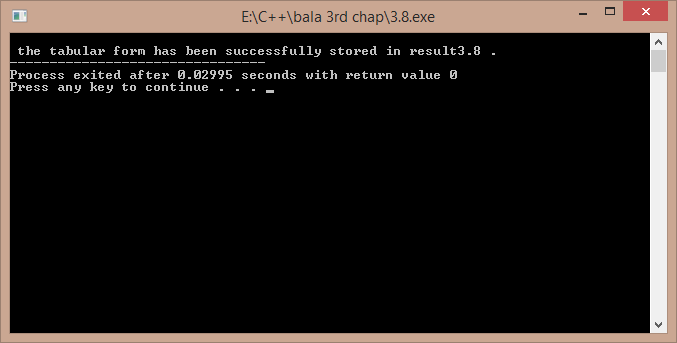
}

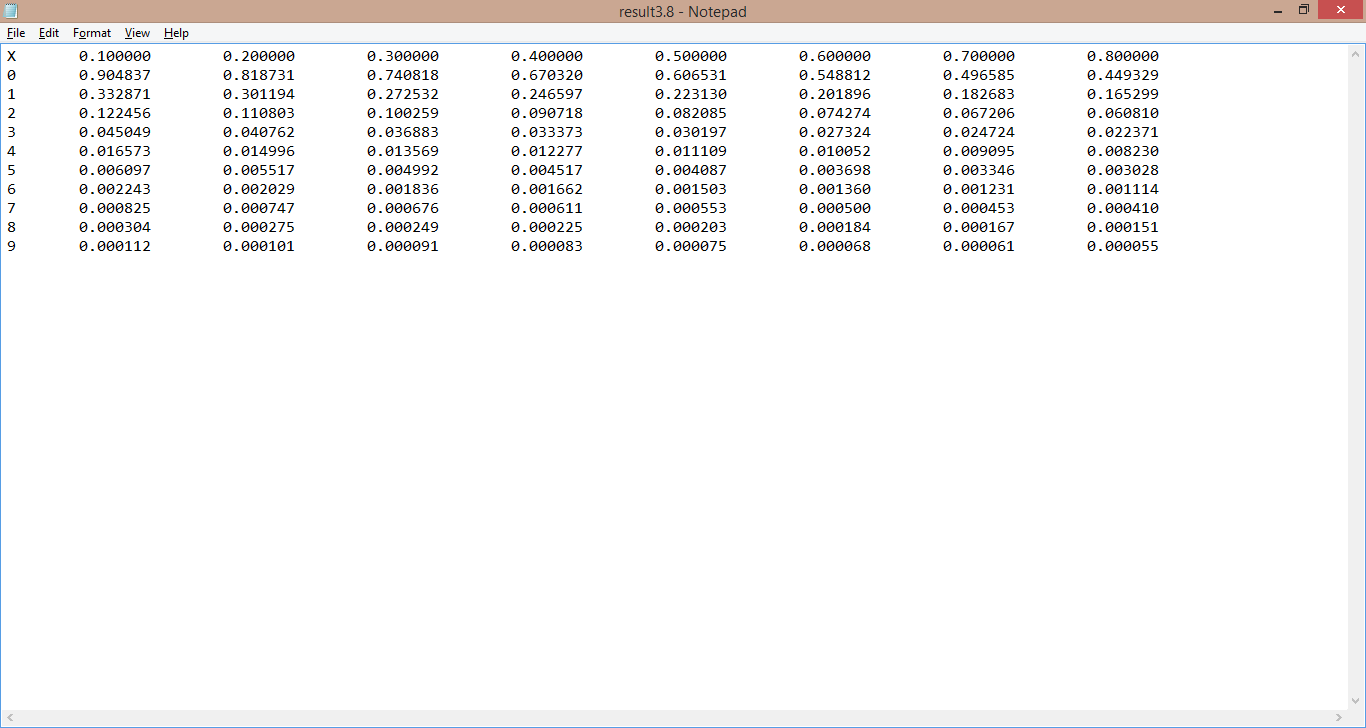
}

cout<<"\n the tabular form has been successfully stored in result3.8 .";

return 0;

}





***THE CONTENTS OF THE RESULT3.8.txt:-***

X 0.100000 0.200000 0.300000 0.400000 0.500000 0.600000 0.700000 0.800000

0 0.904837 0.818731 0.740818 0.670320 0.606531 0.548812 0.496585 0.449329

1 0.332871 0.301194 0.272532 0.246597 0.223130 0.201896 0.182683 0.165299

2 0.122456 0.110803 0.100259 0.090718 0.082085 0.074274 0.067206 0.060810

3 0.045049 0.040762 0.036883 0.033373 0.030197 0.027324 0.024724 0.022371

4 0.016573 0.014996 0.013569 0.012277 0.011109 0.010052 0.009095 0.008230

5 0.006097 0.005517 0.004992 0.004517 0.004087 0.003698 0.003346 0.003028

6 0.002243 0.002029 0.001836 0.001662 0.001503 0.001360 0.001231 0.001114

7 0.000825 0.000747 0.000676 0.000611 0.000553 0.000500 0.000453 0.000410

8 0.000304 0.000275 0.000249 0.000225 0.000203 0.000184 0.000167 0.000151

9 0.000112 0.000101 0.000091 0.000083 0.000075 0.000068 0.000061 0.000055

**3.9)**

ALGORITHM:-

1)start

2)take the number of numbers input and create an array with new operator

3)input all number and take their sum , and hence calculate mean

4)use loops to calculate the variance by taking the difference from the mean

5)display the results

6)end

/\* A program to calculate the standard deviation , variance , mean of the given numbers . Developed by Sekhar Karedla CSE-2 BE ¼ ,CBIT\*/

#include<iostream>

#include<math.h>

using namespace std;

int main()

{

int n,s=0;

cout<<"enter the number of numbers : ";

cin>>n;

int \*p=new int[n];

int i;

cout<<"enter "<<n<<" numbers : ";

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

{

cin>>p[i];

s=s+p[i];

}

float m,sd,v;

m=(1.0/n)\*s;

float s1;

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

{

s1=s1+((p[i]-m)\*(p[i]-m));

}

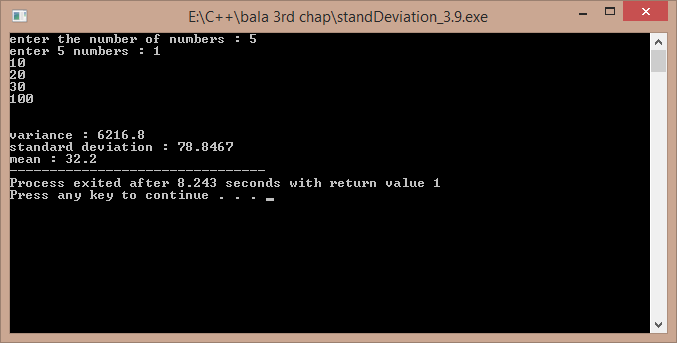
sd=sqrt(s1);

v=sd\*sd;

cout<<"\n\nvariance : "<<v<<"\nstandard deviation : "<<sd<<"\nmean : "<<m;

return 1;

}



**3.10)**

ALGORITHM:-

1)start

2)input the number of units

3)use the given rates to compute the rate using if elseif statements

4)end

/\* A program to calculate the current bill by the input of current units. Developed by Sekhar Karedla CSE-2 BE ¼ ,CBIT\*/

#include<iostream>

using namespace std;

int main()

{

float u,sum;

cout<<"enter the units : "; //entering the units

cin>>u;

if(u<100)

{

sum=u\*60;

}

else if(u>100&&u<=300)

{

sum=(100\*60)+(u-100)\*80; //calculating the bill

}

else

{

sum=(100\*60)+(200\*80)+(u-300)\*90;

}

sum=sum/100;

cout<<"the bill amount is : "<<sum<<" rupees";

return 1;

}

