# *PRACTICALS*

# *C/C++ (PROGRAMS & FLOWCHARTS)*

# 

# *SUBMITTED TO*

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# *Q No (1) :- Write a program for coefficient of variation?*

#include<iostream.h>

#include<conio.h>

#include<math.h>

void maisn()

{

int n, i;

double x, sum=0, s\_sum=0, mean, sd, CV;

cout << "Enter The Sample Size=";

cin >> n;

cout << "Enter The Observations" << endl;

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

{

cin >> x;

sum = sum + x;

s\_sum = s\_sum + (x\*x);

}

mean=sum/n;

sd = sqrt ( (s\_sum/n)-(mean\*mean));

CV = (sd\*100.0) / mean;

cout << "CV=" << CV <<"%";

getch();

}

# *Output Result (1):*

Enter The Sample Size = 10

Enter The Observations

11

12

13

12

13

11

11

12

13

14

CV = 8.03111%

# *Q No (2) :- Write a program for t-statistic?*

#include<iostream.h>

#include<conio.h>

#include<math.h>

void main()

{

int n , i=1;

double x, sum=0, s\_sum=0, Mean, s, Parameter, t;

cout << "Enter The Sample Size=";

cin >> n;

cout << "Enter the Value of Parameter=";

cin >> Parameter;

cout <<"Enter the Observations" <<endl;

while(i<=n)

{

cin>>x;

sum=sum+x;

s\_sum=s\_sum+(x\*x);

i++;

}

Mean = sum / n;

s = sqrt( ((s\_sum)-((Mean\*Mean)/n)) / (n-1) );

t = ((Mean-Parameter)\*sqrt(n))/s;

cout << "t="<<t;

getch();

}

# *Output Result (2):*

Enter the Sample Size = 5

Enter the Value of Parameter = 30

Enter the Observations

33

43

32

34

33

t =0 .289594

# *Q No (3) :- Write a program for z-statistic?*

#include<iostream.h>

#include<conio.h>

void main()

{

int n , i=1;

double x,sum=0, s\_sum=0, Mean, S\_D, Parameter, Z;

cout<<"Enter The Sample Size=";

cin >> n;

cout << "Enter The Value Of Parameter=";

cin >> Parameter;

cout <<"Enter The Observations" <<endl;

do

{

cin>>x;

sum=sum+x;

s\_sum=s\_sum+(x\*x);

i++;

}

While(i<=n);

Mean = sum / n;

S\_D = sqrt( (s\_sum/n)-((Mean/n)\*(Mean/n)) );

Z = ((Mean-Parameter)\*sqrt(n)) / S\_D;

cout << "Z=" << Z;

getch();

}

# *Output Result (3):*

Enter The Sample size = 12

Enter The Value Of Parameter = 0

Enter The Observations

12

13

14

15

13

14

14

15

16

17

15

14

Z =37.8349

# *Q No (4) :- Write a program for F-statistic?*

#include<iostream.h>

#include<conio.h>

#include<math.h>

void main()

{

int i, j, n1,n2;

float X1 , X2, SumX1=0, SumX2=0, S\_SumX2=0, S\_SumX1=0;

float S1, S2, F, Mean1, Mean2;

cout << "Enter the Sample(1) Size” <<endl;

cin >> n1;

cout << "Enter the Observation Of Sample(1)"<<endl;

for(i=1; i<=n1; i++)

{

cin >> X1;

SumX1 = SumX1 + X1;

S\_SumX1 = S\_SumX1 + (X1\*X1);

}

cout << "Enter the Sample(2) Size" <<endl;

cin >> n2;

cout << "Enter the Observation Of Sample(2)" << endl;

for(j=1; j<=n2; j++)

{

cin >> X2;

SumX2 = SumX2 + X2;

S\_SumX2 = S\_SumX2 + (X2\*X2);

}

S1 = (S\_SumX1/n1) - ((SumX1/n1)\*(SumX1/n1));

S2 = (S\_SumX2/n2) - ((SumX2/n2)\*(SumX2/n2));

F=S1/S2;

cout<<"F="<<F;

getch();

}

# *Output Result (4):*

Enter the Sample(1) Size = 3

Enter the Sample (1) Observations

0.23

0.33

0.34

Enter the Sample (2) Size = 3

Enter the Sample (2) Observations

0.5

0.32

0.13

F = 0.108082

# *Q No (5) :- Write a program for linear regression line?*

#include<iostream.h>

#include<conio.h>

#include<math.h>

void main()

{

int i=1, n;

double X, Y, SumX=0, SumY=0, SumXY=0, S\_SumX=0, a, b;

cout << "Enter the Sample Size=";

cin >> n;

cout << "Enter the Observation Of X And Y" <<endl;

do

{

cin >> X >>Y;

SumX = SumX+X;

S\_SumX = S\_SumX + pow(X,2);

SumY = SumY + Y;

SumXY = SumXY + (X\*Y);

i++;

}

while(i<=n);

b = ( (n\*SumXY)-(SumX\*SumY) ) / ( (n\*S\_SumX)-pow(SumX,2) );

a = (SumY/n) - ( (b\*SumX)/n );

cout<<"Y="<<a<<"+"<<b<<"X";

getch();

}

# *Output Result (5):*

Enter the Sample Size = 5

Enter the Observations of X And Y

2

3

4

5

6

8

9

7

8

9

Y = 2.2622 + 0.713415X

# *Q No (6) :- Write a program for correlation?*

#include<iostream.h>

#include<conio.h>

#include<math.h>

void main()

{

int n,i=1;

double X, Y, r, SumX=0, SumY=0, S\_SumX=0, S\_SumY=0, SumXY=0;

cout << "Enter the Sample Size =" ;

cin >> n;

cout<<"Enter the Value Of X and Y" <<endl;

while(i<=n)

{

cin >> X ;

cin >> Y ;

SumX = SumX + X ;

SumY = SumY + Y ;

S\_SumX = S\_SumX + (X\*X) ;

S\_SumY = S\_SumY + (Y\*Y) ;

SumXY = SumXY + (X\*Y) ;

i++;

}

r = ( (n\*SumXY) - (SumX\*SumY) ) / sqrt ( ((n\*S\_SumX)-(SumX\*SumX))\* ((n\*S\_SumY)-(SumY\*SumY)) ) ;

cout << "r=" << r ;

getch();

}

# *Output Result (6):*

Enter the Sample Size = 7

Enter the Value of X and Y

3

4

5

6

7

8

9

8

7

6

5

4

4

3

r = 0.860989

# *Q No (7) :- Write a program for Probabilities of Geometric distribution?*

#include<iostream.h>

#include<conio.h>

#include<math.h>

void main()

{

int n, x;

long double P, q, Prob;

cout <<" Enter the Trails=";

cin >> n;

cout <<" Enter the Value Of Success=";

cin >> P;

q = 1-P;

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

{

Prob = (P) \* (pow(q,x-1));

cout <<" P[X="<<x<<"]=" << Prob <<endl;

}

getch();

}

# *Output Result (7):*

Enter the Trials = 8

Enter the Value of Success = 0.5

P[X=1] = 0.5

P[X=2] = 0.25

P[X=3] = 0.125

P[X=4] = 0.0625

P[X=5] = 0.03125

P[X=6] = 0.015625

P[X=7] = 0.0078125

P[X=8] = 0.00930625

# *Q No (8) :- Write a program for median?*

#include<iostream.h>

#include<conio.h>

void main()

{

int i, j, n;

double X [1000], Median, Temp;

cout<<" Enter the Sample Size= ";

cin >> n;

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

{

cout << "Enter the Observation ( " << i << " )= ";

cin >> X[i];

}

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

{

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

if(X[j]>X[j+1])

{

Temp = X[j];

X[j] = X[j+1];

X[j+1] = Temp;

}

}

cout << " Observation Data In Sorted Form " << endl;

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

{

cout << X[i] << endl;

}

if(n%2==0)

Median = ( X[n / 2] + X[ ( n / 2) + 1] ) / 2;

else

Median = X[ (n + 1) / 2];

cout << " Median= " << Median;

getch();

}

# *Output Result (8):*

Enter the Sample Size = 5

Enter the Observation (1) = 13

Enter the Observation (2) = 9

Enter the Observation (3) = 15

Enter the Observation (4) = 16

Enter The Observation (5) = 4

Observation Data In Sorted Form

4

9

13

15

16

Median = 13

# *Q No (9) :- Write a program for probabilities of Binomial distribution?*

#include<iostream.h>

#include<conio.h>

#include<math.h>

double fact(int f);

double comb(int a,int b);

void main()

{

int n, x;

double P, q, Prob;

cout <<"Enter The Number Of Trials n=";

cin >> n;

cout <<"Enter The Value Of Success P=";

cin >> P;

q = 1-P;

cout <<"The Value Of Failure q=" << q << endl;

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

{

Prob =( comb(n,x) ) \* ( pow(P,x) ) \* ( pow(q,n-x) );

cout <<"P{X=" << x <<"}=" << Prob << endl;

}

getch();

}

// Function Of Factorial

double fact(int f)

{

if( f==0 )

return 1;

else

return f \* fact(f-1);

}

double comb(int a,int b)

{

return fact(a) /( fact(b) \* fact(a-b) );

}

*Output Result (9):*

Enter The Number Of Trials n = 8

Enter The Value Of Success P = 0.10

The Value Of Failure q = 0.90

P{X = 0} = 0.430467

P{X = 1} = 0.382638

P{X = 2} = 0.148803

P{X = 3} = 0.033067

P{X = 4} = 0.004593

P{X = 5} = 0.000408

P{X = 6} = 2.268e-05

P{X = 7} = 7.2e-07

P{X = 8} = 1e-08

# *Q No (10) :- Write a program for probabilities of Poisson distribution?*

#include<iostream.h>

#include<conio.h>

#include<math.h>

double fact(int);

void main()

{

int n;

double meu, e=2.71828, Prob;

cout << "Input Total Trials n=";

cin >> n;

cout << "Input The Value Of meu=";

cin >> meu;

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

{

Prob = ( (pow(e,-meu)) \* (pow(meu,x)) ) / fact(x);

cout << "P[X=" << x << "]=" << Prob << endl;

}

getch();

}

double fact(int f)

{

if(f==0)

return 1;

else

return f\*fact(f-1); }

# *Output Result (10):*

Input Total Trials n = 12

Input The Value Of meu = 4

P[X = 0] = 0.0183175

P[X = 1] = 0.0732628

P[X = 2] = 0.146526

P[X = 3] = 0.195367

P[X = 4] = 0.195367

P[X = 5] = 0.156254

P[X = 6] = 0.104196

P[X = 7] = 0.0595405

P[X = 8] = 0.0297702

P[X = 9] = 0.0132312

P[X = 10] = 0.00529249

P[X = 11] = 0.00192454

P[X = 12] = 0.000641514

# *Q No (11) :- Write a program for variance and standard deviation?*

#include<iostream.h>

#include<conio.h>

#include<math.h>

void main()

{

int i=1, n;

float X, SumX, S\_SumX=0, S\_D, Var;

cout << "Enter The Sample Size=";

cin >> n;

cout << "Enter The Observation Of Sample" << endl;

do

{

cin >> X;

SumX = SumX +X;

S\_SumX = S\_SumX + (X\*X);

i++;

}

while(i<=n);

Var = (S\_SumX/n) -( (SumX/n) \* (SumX/n) );

S\_D = sqrt(Var);

cout << "Var=" << Var << endl;

cout << "S.D=" << S\_D << endl;

getch();

}

# *Output Result (11):*

Enter the Sample size = 8

Enter the Observations of the Sample

3

4

5

6

7

8

9

9

Var = 4.48438

S.D = 2.117635

# *Q No (12) :- Write a program for trace of a matrix?*

#include<iostream.h>

#include<conio.h>

void main()

{

int R, C, i, j;

float A[20][20], Sum=0;

// Matrix A

cout << "Enter the Number Of Rows(A)=";

cin >> R;

cout << "Enter the Number Of Columns(A)=";

cin >> C;

cout << "Enter the Elements Of A"<<endl;

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

{

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

{

cin >> A[i][j];

}}

cout << "The Matrix A Is" << endl;

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

{

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

{

cout<< A[i][j]<< "\t";

}

cout<<endl;

}

//Sum Of Diagonal Elements Of A Is

if(R==C)

{

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

{

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

{

if(i==j)

Sum+=A[i][j];

}}}

else

{

cout<<"The Matrix A Is Not Square"<<endl;

}

cout<<"trace(A)="<<Sum<<endl;

getch();

}

# *Output Result (12):*

Enter the Number Of Rows(A) = 3

Enter the Number Of Columns(A) =3

Enter the Elements Of A

2

3

4

2

3

4

2

3

4

The Matrix A Is

2 3 4

2 3 4

2 3 4

Trace(A)=9

# *Q No (13) :- Write a program for product of a matrices?*

#include<iostream.h>

#include<conio.h>

void main()

{

int R, C, i, j, k, m, n;

float A[20][20], B[20][20], F[20][20]={0};

// Matrix A

cout << "Enter The Number Of Rows(A)=";

cin >> R;

cout << "Enter The Number Of Columns(A)=";

cin >> C;

cout << "Enter The Elements Of A" << endl;

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

{

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

{

cin >> A[i][j];

}}

cout << "The Matrix A Is" << endl;

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

{

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

{

cout << A[i][j] << "\t";

}

cout << endl;

}

// Matrix B

cout << "Enter The Number Of Rows(B)=";

cin >> m;

cout << "Enter The Number Of Columnms(B)=";

cin >> n;

cout << "Enter The Elements Of B" << endl;

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

{

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

{

cin >> B[i][j];

}}

cout << "The Matrix B Is" << endl;

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

{

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

{

cout << B[i][j] << "\t";

}

cout << endl;

}

// Multiplication

if(C==m)

{

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

{

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

{

for(k=1;k<=C;k++)

{0

F[i][j]+= (A[i][k] \* B[k][j]);

}}}}

else

{

cout<<"The Multiplication Is Not Possible"<<endl;

}

cout<<"The Matrix A\*B Is"<<endl;

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

{

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

{

cout<<F[i][j]<<"\t";

}

cout<<endl;

}

getch();

}

# *Output Result (13):*

Enter The Number Of Rows(A) = 3

Enter The Number Of Columns(A) = 3

Enter The Elements Of A

2

3

4

5

6

7

8

9

0

The Matrix A Is

2 3 4

5 6 7

8 9 0

Enter The Number Of Rows(B) = 3

Enter The Number Of Columns(B) = 1

Enter The Elements Of B

3

4

5

The Matrix B Is

3

4

5

The Matrix A\*B Is

38

74

60

*Q No (14) :- Write a program for factorial?*

#include<iostream.h>

#include<conio.h>

long double fact(int);

void main()

{

int n;

cout << " Enter Any Number=";

cin >> n;

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

{

cout << i << "!=" << fact(i) <<endl;

}

getch();

}

long double fact(int f)

{

if(f==0)

return 1;

else

return f\*fact(f-1);

}

# *Output Result (14):*

Enter Any Number = 10

0! = 1

1! = 1

2! = 2

3! = 6

4! = 24

5! = 120

6! = 720

7! = 5040

8! = 40320

9! = 362880

10! = 3628800