**SAMPLE PAPER-2013**

**Class-XII**

**SUB:- COMPUTER SCIENCE**

**MAX.MARKS: 70 DURATION : 3 Hrs.**

1. a) Observe the program segment given below carefully, and answer the question

 that follows. [1]

class Book

{ int Book\_no :

char Book\_name[20] ;

public ;

//function to enter Book details

void enterdetails( ) ;

//function to display Book details

void showdetails( ) ;

//function to return Book\_no

int Rbook\_no( ) {return Book\_no ;}

} ; void Modify (Book NEW)

{ fstream File ;

File.open(.BOOK.DAT., ios :: binary l ios :: in l ios :: out) ;

Book OB ;

int Record = 0, Found = 0 ;

while (!Found && File.read((char\*) &OB, sizeof(OB) ) )

{ Recordsread++ ;

if (NEW.RBook\_no( ) == OB.RBook\_no( ))

{ \_\_\_\_\_\_\_\_\_\_\_ //Missing Statement

File.write((char\*) &NEW, size of(NEW)) ;

Found = 1 ;

}

else

File.write((char\*) &OB, sizeof(OB)) ;

}

if (!Found)

cout << .Record for modification does not exist. ;

File.close( ) ;

}

If the function Modify( ) is supposed to modify a record in file BOOK.DAT

with the values of Book NEW passed to its argument, write the appropriate

statement for**Missing Statement** using seekp( ) or seekg( ), whichever

needed, in the above code that would write the modified record at its proper

place.

b)Write a function in C++ to count and display the number of lines starting with

alphabet .A. present in a text file “LINES.TXT” . [2]

**Example :**

If the file .LINES.TXT. contains the following lines,

A boy is playing there.

There is a playground.

An aeroplane is in the sky.

Alphabets and numbers are allowed in the password.

The function should display the output as 3

c)Given a binary file STUDENT.DAT, containing records of the following class

Student type [3]

class Student

{ char S\_Admno[10] ; //Admission number of student

char S\_Name[30] ; //Name of student

int Percentage ; //Marks Percentage of student

public :

void EnterData( )

{ gets(S\_Admno) ; gets(S\_Name) ; cin >> Percentage ;

}

void DisplayData( )

{ cout << setw(12) << S\_Admno ;

cout << setw(32) << S\_Name ;

cout << setw(3) << Percentage << endl ;

}

int ReturnPercentage( ) {return Percentage ;}

} ;

Write a function in C++, that would read contents of file STUDENT.DAT and

display the details of those Students whose Percentage is above 95.

2.a) Observe the program segment given below carefully , and answer the question

that follows : [1]

class Member

{ int Member\_no ;

char Member\_name[20] ;

public :

//function to enter Member details

void enterdetails ( ) ;

//function to display Member details

void showdetails ( ) ;

//function to return Member\_no

int RMember\_no( ) {return Member\_no ;}

} ;

void Update (Member NEW)

{ fstream File ;

File.open(.MEMBER.DAT. , ios :: binary l ios :: in l ios :: out) ;

Member OM ;

int Recordsread = 0, Found = 0 ;

while (!Found && File.read((char\*) & OM, sizeof(OM)))

{ Recordsread++ ;

if (NEW.RMember\_no( ) == OM.RMember\_no( ))

{ \_\_\_\_\_\_\_\_\_\_\_\_\_ //Missing Statement

File.write((char\*) & NEW , sizeof(NEW) ;

Found = 1 ;

}

else

File.write((char\*) & OM, sizeof(OM)) ;

}

if (!Found)

cout<<.Record for modification does not exist. ;

File.close( ) ;

}

If the function Update( ) is supposed to modify a record in file

MEMBER.DAT with the values of Member NEW passed to its argument,

write the appropriate statement for **Missing statement** using seekp( ) or seekg(

), whichever needed, in the above code that would write the modified record at

its proper place.

2.b) Write a function in C++ to count and display the number of lines not starting with

alphabet .A. present in a text file “ STORY.TXT”. [2]

**Example :**

If the file .STORY.TXT. contains the following lines,

The rose is red.

A girl is playing there.

There is a playground.

An aeroplane is in the sky.

Numbers are not allowed in the password.

The function should display the output as 3

c)Assuming that a text file named FIRST.TXT contains some text written into it,

write a function named **vowelwords( )**, that reads the file FIRST.TXT and creates a

new file named SECOND.TXT, to contain only those **words** from the file [2]

FIRST.TXT which start with start with a lowercase vowel (i.e. with .a., .e., .I., .o.,.u.).

For example if the file FIRST.TXT contains

**Carry umbrella and overcoat when it rains**

Then the file SECOND.TXT shall contain:

**umbrella and overcoat it**

3.a)Write a function **readfile( )** to read all the records present in already existing

binary file SHIP.DAT and display them on the screen, also count the number of

records present in the file. [2]

b )Write a user defined function in C++ to read the content from a text file

NOTES.TXT, count and display the number of blank spaces present in it. [2]

c)Assuming a binary file FUN.DAT is containing objects belonging to a class

LAUGHTER (as defined below).Write a user defined function in C++ to add more

objects belonging to class LAUGHTER at the bottom of it. [3]

class LAUGHTER

{ int Idno;// Identification number

char Type[5]; //LAUGHTER Type

char Desc[255]; //Description

public :

void Newentry( )

{ cin>>Idno;gets(Type);gets(Desc);}

void Showonscreen( )

{ cout<<Idno<<.:.<<Type<<endl<<Desc<<endl;}

d)What is the difference between pub( ) and write ( )? [1]

**4. a)** Write a function in C++, which accepts an integer array and its size as parameters

and rearranges the array in reverse. [2]

**Example**:If an array of nine elements initially contains the elements as 4, 2, 5, 1, 6,

7, 8, 12, 10

Then the function should rearrange the array as 10,12, 8, 7, 6,

1, 5, 2, 4

**b)**An array Arr[40][10] is store in the memory along the column with each element

occupying 4 bytes. Find out the base address of the location Arr[3][6] if the location

Arr[30][10] is stored at the address 9000. [3]

**c)**Write a function in C++ to print the product of each column of a two dimensional

array passed as the arguments of the function. [2]

**Example** : If the two dimensional array contains

Then the output should appear as:

Product of Column 1 = 24

Product of Column 2 = 30

Product of Column 3 =240

**5 .a)**Write a function in C++, which accepts an integer array and its size as arguments

and swap the elements of every even location with its following odd location. [2]

**Example** : If an array of nine elements initially contains the elements as

2,4,1,6,5,7,9,23,10

then the function should rearrange the array as

4,2,6,1,7,5,23,9,10

**b)** An array Arr[50][10] is store in the memory along the column with each element

occupying 2 bytes. Find out the Base address of the location Arr[20][50], if the

location Arr[10][25] is stored at the address 10000. [3]

**c)**Write a function in C++ to print the product of each row of a two dimensional

array passed as the arguments of the function [2]

**Example**: if the two imensional array contains

Then the output should appear as:

Product of Row 1 = 8000

Product of Row 2 = 6000

Product of Row 3 =3600

Product of Row 4 = 2400

**6. a)**An array Array[20][15] is stored in the memory along the **column** with each

element occupying 8 bytes. Find out the base address of the element Array[2][3] if the

element Array[4][5] is stored at the address 1000. [3]

**b)**Write a function in C++ which accepts an integer array and its size as arguments

and replaces elements having even values with its half and elements having odd

values with twice its value. [2]

**Example :** If an array of five elements initially contains the elements as 3, 4, 5, 16, 9

then the function should rearrange content of the array as 6, 2, 10, 8, 18

**c)**Write a function in C++ which accepts a 2D array of integers and its size as

arguments and displays the elements of middle row and the elements of middle

column. [Assuming the 2D Array to be a square matrix with odd dimension i.e., 3x3,

5x5, 7x7 etc.] [2]

**Example :** If the array content is

3 5 4

7 6 9

2 1 8

Output through the function should be :

Middle Row : 7 6 9

Middle Column : 5 6 1

**d)**Write function in C++ which accepts an integer array and size as arguments and

assign values into a 2D array of integers in the following format : [2]

**If the array is 1, 2, 3, 4, 5, 6**

The resultant 2D array is given below :

1 0 0 0 0 0

1 2 0 0 0 0

1 2 3 0 0 0

1 2 3 4 0 0

1 2 3 4 5 0

1 2 3 4 5 6

**If the array is 1, 2, 3**

The resultant 2D array is given :

1 0 0

1 2 0

1 2 3

**e)**Write a function in C++ which accepts an integer array and its size as arguments

and exchanges the values of first half side elements with the second half side elements

of the array. [3]

**Example :**

If an array of 8 elements initial content as 2, 4, 1, 6, 7, 9, 23, 10

The function should rearrange array as 7, 9, 23, 10, 2, 4, 1, 6

 **f) .** Suppose A, B, C are arrays of integers of size M, N and M+N respectively. The

numbers in array A appear in ascending order while numbers in array in descending

order. Write user defined function in C++ to produce third array C by merging array

A by B in ascending order. Use A, B and C as arguments in the function. [2]

7. The Cyber Mind Organization has set up its new Branch at Mizoram for its

office and web based activities. It has 4Wings of buildings as shown in the

diagram: [4]

**Center to center distances between various blocks**

Wing X to Wing Z 40 m

Wing Z to Wing Y 60 m

Wing Y to Wing X 135 m

Wing Y to Wing U 70 m

Wing X to Wing U 165 m

Wing Z to Wing U 80 m

**Number of computers:**

Wing X 50

Wing Z 130

Wing Y 40

Wing U 15

1) Suggest a most suitable cable layout of connections between the Wings, and

topology

2) Suggest the most suitable place (i.e., Wing) to house the server of this

organization with a suitable reason, with justification.

3) Suggest the placement of the following devices with justification:1m

(i)Repeater (ii) Hub/Switch

4) The organization is planning to link its head office situated in Delhi with the

offices at Srinagar.1m Suggest an economic way to connect it; the company is

ready to compromise on the speed of connectivity. Justify your answer.
8.

a) What are repeaters? [1]

b) What is the difference between LAN and MAN? [1]

c) What is called MOSAIC ? [1]

d) What do you understand by a bakbone network? [1]

e) Expand: ARPANET, FLOSS, GNU, ASP [2]

f) What is (a) web 2.0 and (b) Propeietory software ? [2]

9.(a) Minimise F(w,x,y,z) using Karnaugh map.

F ( w,x,y,z) = (0,4,8,12) [3]

(b) Reduce the following Boolean expression using K . Map :

 **F(P, Q, R, S,) = Σ(0,3,5,6,7,11,12,15) [3]**

**c.** Obtain simplified form for a boolean expression

F(x,y,z,w)= å(1,3,4,5,7,9,11,12,13,15) using Karnaugh Map. [3]

d. What is called redundant group in K-Map? [1]