**DELHI PUBLIC SCHOOL RAJNAGAR**

(Under the Aegis of the Delhi Public School Society, East of Kailash, New Delhi)

**Ch-4 Classes & Objects**

1. Define a class Tourist in C++ with the following specification: (**CBSE -2014**)

**Data Members**

• CN0 - to store Cab No

• Ctype - to store a chahracter 'A', 'B' or 'C' as City Type

PerKM - to store per Kilo Meter charges

• Distance - to store Distance travelled (in Km)

**Member Functions**

• A constructor function to initialize CType as 'A' and CNo as '0000'

• A function CityCharges() to assign PerKM as per the following table:

CType Per KM

A 20

B 18

C 15

• A function RegisterCab() to allow administrator to enter the values for CNo and CType. Also, this function

should call CityCharges() to assign PerKM Charges.

• A function Display() to allow user to enter the value of Distance and display CNo, CType, PerKM,

PerKM\*Distance (as Amount) on screen.

1. Define a class Bus in C++ with the following specifications: (**CBSE -2013**)

Data Members

• Busno - to store Bus No

• From – to store Place name of origin

• To – to store Place name of destination

• Type – to store Bus Type such as ‘O’ for ordinary

• Distance – to store the Distance in Kilometers

• Fare –to store the Bus Fare

Member Functions

• A constructor function to initialize Type as ‘O’ and Freight as 500

• A function CalcFare() to calculate Fare as per the following criteria:

Type Fare

‘O’ 15\*Distance

‘E’ 20\*Distance

‘L’ 24\*Distance

• A function Allocate() to allow user to enter values for Busno, From, To, Type and Distance. Also,

this function should call CalcFare() to calculate Fare.

• A function Show() to display the content of all the data members on screen.

1. What is the difference between the members in private visibility mode and the members in protected visibility mode inside a class? Also, give a suitable C++ code to illustrate both. **(CBSE-2012)**
2. Define a class RESTRA in C++ with following description: **(CBSE-2012)**

Private Members:

 FoodCode of type int

 Food of type string

 FType of type string

 Sticker of type string

 A member function GetSticker() to assign the following values for Sticker as per the given Ftype:



Public Members :

* A function GetFood() to allow user to enter values for FoodCode, Food,Ftype and call function GetSticker() to assign Sticker.
* A function ShowFood() to allow user to view the concept of all the data members.

1. Differentiate between members, which are present within the private visibility

mode with those which are present within the public visibility modes. **(CBSE-2011)**

1. Define a class candidate in C++ with following Description: **(CBSE-2011)**

Private Members

 A data member RNo (Registration Number) of type long

 A data member Name of type string

A data member Score of type float

 A data member Remark of type string

 A member function AssignRem( ) to assign Remarks as per the Score

obtained by a candidate. Score range and the respective Remarks are

shown as follows:

Score Remarks

>=50 Selected

less than 50 Not selected

Public members

 A function ENTER( ) to allow user to enter values for RNo, Name, Score

& call function AssignRem() to assign the remarks.

 A function DISPLAY( ) to allow user to view the content of all the data

members.

1. Define a class STOCK in C++ with following description: **(CBSE-2010)**

Private Members:

 ICode of type integer(Item Code)

 Item of type string(Item Name)

 Price of type float(Price of each item)

 Qty of type integer(Quantity in stock)

 Discount of type float(Discount percentage on the item)

 A member function FindDisc() to calculate discount as per the following rule:

If Qty<=50 Discount is 0

If 50<Qty<=10 Discount is 5

If Qty>100 Discount is 10

Public Members:

 A function Buy () Allow to user to enter values for ICode, Item, Price, Qty and call

function FindDisc () to calculate the discount.

 A function ShowAll () to Allow user to view to content of all the data members.

1. Declare a class Directory with the following specifications : **(CBSE-2009)**

private members of the class

Docunames – an array of strings of size [10][25]

(to represent all the names of Documents inside Directory)

Freespace – long

(to represent total number of bytes available in Directory)

Occupied – long

(to represent total number of bytes used in Directory)

public members of the class

Newdocuentry() – A function to accept values of Docunames, Freespace and Occupied from

user

RetFreespace() – A function that returns the value of total Kilobytes available

(1 Kilobyte = 1024 bytes)

Showfiles() – A function that displays the names of all the Documents in Directory.

1. Define a class Serial in C++ with the following specifications : **(CBSE-2009)**

private members of class Serial

— Serialcode integer

— Title 20 characters

— Duration float

— Noofepisodes integer

public member function of class Serial

— A constructor function to initialise Duration as 30 and Noofepisodes as 10.

— NewSerial( ) function to accept values for Serialcode and Title

— Otherentries( ) function to assign the values of Duration and Noofepisodes with the help of corresponding values passed as parameters to this function.

— Dispdata( ) function to display all the data members on the screen.

1. Consider the following class declaration and answer the questions below : **(CBSE-2008)**

class SmallObj

{

private:

int some, more;

void err\_1( ) { cout << "error"; }

public:

void Xdata(int d) {some = d; more = d++;}

void Ydata( ) { cout << some << " " << more;}

};

(i) Write the name that specifies the above class.

(ii) Write the data of the class with their access scope.

(iii) Write all member functions of the class along with their access scope.

(iv) Indicate the member function of the SmallObj that sets data.

1. Define a class with complete function definitions COMPETITION in C++ with following specifications: (Year 2004)

private members

event\_no integer

description char(30)

score integer

qualified char

public members

input() To take input for event\_no, description and score

Award ( ) To award qualified as ‘y’ if score is more than the cut off score passed as int to the function else award ‘N’

show() To display all details

1. The following code is from a game, which generates a set of 4 random numbers. Praful is playing this game, help him to identify the correct option(s) out of the four choice given below as the possible set of such numbers generated from the program code so that he wins the game. Justify your answer. **(Year 2010)**

#include<iostream.h>

#include<stdlib.h>

const int LOW=25;

void main(){

randomize( );

int POINT=5, Number;

for (int I=1;I<=4;I++){

Number=LOW+random(POINT);

cout<<Number<<”:”;

POINT--; }}

(i) 29:26:25:28:

(ii) 24:28:25:26:

(iii) 29:26:24:28:

(iv) 29:26:25:26:

1. Go through the C++ code shown below, and find out the possible output or output from the suggested output options (i) to(iv). Also, write the least value and highest value, which can be assigned to the variable guess. **(Year 2011)**

# include <iostream.h>

#include <stdlib.h>

void main ( ){

randomize ();

int Guess, High=4 ;

Guess=random (High) +50;

for (int C=guess ; C<=55 ; C++)

cout<<C<<“#”;}

(i) 50 # 51 # 52 # 53 # 54 # 55 #

(ii) 52 # 53 # 54 # 55 #

(iii) 53 # 54 #

(iv) 51 # 52 # 53 # 54 # 55

1. Observe the following program and find out, which output(s) out of(i) to(iv) will not be expected from the program? What will be the minimum and the maximum value assigned to the variable chance? **(Year 2012)**

#include<iostream.h>

#include<stdlib.h>

void main( ){

randomize( );

int Arr[]={9,6},N;

int Chance=random(2)+10;

for (int C=0;C<2;C++){

N=random(2);

cout<<Arr[N]+Chance<<”#”;}}

1. 9#6# (ii) 19#17# (iii) 19#16# (iv) 20#16#
2. Based on the following C++ code find out the expected correct output(s) from the option (i) to(iv). Also, find out the minimum and the maximum value that can be assigned to the variable Guess used in the code at the time when value of Turn is 3. **(Year 2013)**

void main(){

char Result[][10]={"GOLD","SILVER","BRONZE"};

int Getit=9,Guess;

for(int Turn=1;Turn<4;Turn++){

Guess=random(Turn);

cout<<Getit-Guess<<Result[Guess]<<"\*";}}

(i) 9GOLD\*9GOLD\*8SILVER\*

(ii) 9GOLD\*7BRONZE\*8GOLD\*

(iii) 9GOLD\*8SILVER\*9GOLD\*

(iv) 9GOLD\*8SILVER\*8GOLD\*

1. Read the following C++ code carefully and find out, which out of the given options (i) to (iv) are the expected correct output(s) of it. Also, write the maximum and minimum value that can be assigned to the variable Taker used in the code: **(Year 2014)**

void main(){

int GuessMe[4]={100, 50, 200, 20};

int Taker=random(2)+2;

for(int Chance=0;Chance<Taker;Chance++)

cout<<GuessMe[Chance]<<"#";

}

(i) 100#

(ii) 50#200#

(iii) 100#50#200#

(iv) 100#50

1. Study the following program and select the possible output(s) from the options (i)

to (iv) following it. Also, write the maximum and the minimum values that can be

assigned to the variable NUM. **(Year 2015)**

Note :

– Assume all required header files are already being included in the program.

– random(n) function generates an integer between 0 and n – 1.

void main()

{

randomize();

int NUM;

NUM=random(3)+2;

char TEXT[]=”ABCDEFGHIJK”;

for (int I=1;I<=NUM; I++)

{

for(int J=NUM; J<=7;J++)

cout<<TEXT[J];

cout<<end1;

}}

(i) BCDEFGH (ii) CDEFGH (iii) EFGH (iv) FGHI

BCDEFGH CDEFGH EFGH FGHI

EFGH FGHI

EFGH FGHI

1. **What are the differences between a data type struct and data type class in C++?**
2. **When will you make a function inline and why?**
3. **Can we use the same function name for a member function of a class and an outside i.e., a non-member function in the same program file?**