

Holiday Homework
Class – XII
Computer Science

Topics covered

- 1) SQL**
- 2) Classes and objects**
- 3) Constructors and Destructors**
- 4) Inheritance**
- 5) Review of class XI**
- 6) Networking & Boolean Algebra**

1. Consider the following tables FACULTY and COURSES. Write SQL commands for the statements (i) to (v) and give outputs for SQL queries (vi) to (viii)

FACULTY

F_ID	Fname	Lname	Hire_date	Salary
102	Amit	Mishra	12-10-1998	12000
103	Nitin	Vyas	24-12-1994	8000
104	Rakshit	Soni	18-5-2001	14000
105	Rashmi	Malhotra	11-9-2004	11000
106	Sulekha	Srivastava	5-6-2006	10000
107	Niranjan	Kumar	26-8-1996	16000

COURSES

C_ID	F_ID	Cname	Fees
C21	102	Grid Computing	40000
C22	106	System Design	16000
C23	104	Computer Security	8000
C24	106	Human Biology	15000
C25	102	Computer Network	20000
C26	105	Visual Basic	6000
C27	107	Dreamweaver	4000

- i) To display details of those Faculties whose salary is greater than 12000.
- ii) To display the details of courses whose fees is in the range of 15000 to 50000 (both values included).
- iii) To increase the fees of all courses by 500.
- iv) To display details of those courses which are taught by 'Sulekha'.
- v) To display name of the Faculty whose salary is maximum.
- vi) Select COUNT(DISTINCT F_ID) from COURSES;
- vii) Select MIN(Salary) from FACULTY,COURSES where COURSES.C_ID = FACULTY.F_ID;
- viii) Select SUM(Fees) from courses Group By F_ID having count(*) > 1;
- ix) Select Fname, Lname from FACULTY Where Lname like "M%";

2. Study the following tables DOCTOR and SALARY and write SQL commands for the questions (i) to (iv) and give outputs for SQL queries (v) to (vi):

TABLE : DOCTOR

ID	NAME	DEPT	SEX	EXPERIENCE
101	John	ENT	M	12
104	Smith	ORTHOPEDIC	M	5
107	George	CARDIOLOGY	M	10
114	Lara	SKIN	F	3
109	K George	MEDICINE	F	9
105	Johnson	ORTHOPEDIC	M	10
117	Lucy	ENT	F	3
111	Bill	MEDICINE	F	12
130	Morphy	ORTHOPEDIC	M	15

TABLE : SALARY

ID	BASIC	ALLOWANCE	CONSULTATION
101	12000	1000	300
104	23000	2300	500

107	32000	4000	500
114	12000	5200	100
109	42000	1700	200
105	18900	1690	300
130	21700	2600	300

- i) Display NAME of all doctors who are in "MEDICINE" having more than 10 years experience from the table DOCTOR.
- ii) Display the average salary of all doctors working in "ENT" department using the tables DOCTOR and SALARY. Salary = BASIC + ALLOWANCE
- iii) Display the minimum ALLOWANCE of female doctors.
- iv) Display the highest consultation fee among all male doctors.
- v) To display records of all the doctors in ascending order of experience.
- vi) SELECT count(*) from DOCTOR where SEX = "F"
- vii) SELECT NAME, DEPT, BASIC from DOCTOR, SALARY where DEPT = "ENT" and DOCTOR.ID = SALARY.ID

3. Consider the following C++ declarations and answer the questions given below:-

```
class alpha
{
    int x,y;

    protected:
        void putvala(
); public:
        void getvala( );
};
```

```
class beta : private alpha
{
    int m,n;
    protected:
        void getvalb(
); public:
        void putvalb( );
```

```

};
class gamma : protected beta
{
    int a;
    public:
        void getdata( );
        void showdata( );
};

```

- i. Write the names of member functions, which are accessible from the object of class gamma.
- ii. Write the names of members, which are accessible from the member function of class beta.
- iii. Name the base class and derived class of class gamma.
- iv. Name the private member functions of class gamma.

4. Answer the questions (i) to (iv) based on the following :

```

class COMP
{ private :
    char Manufacturer [30];
    char addr[15];

    public:
    toys( );

    void RCOMP( );
    void DCOMP( );
};

class TOY: public COMP
{ private:
    char bcode[10];
    public:
    double cost_of_toy;
    void RTOY ( );
    void DTOY( );
};

```

```

class BUYER: public TOY
{ private:
char nm[30];

char delivery date[10];
char *baddr;

public:

void RBUYER( );
void DBUYER( );

};

void main ( )
{   BUYER MyToy; }

```

1. Mention the member names that are accessible by MyToy declared in main() function.
2. Name the data members which can be accessed by the functions of BUYER class.
3. Name the members that can be accessed by function RTOY().
4. How many bytes will be occupied by the objects of class BUYER?
5. Answer the questions (i) to (iv) based on the following code :

```

Class Base
{ int A1 ;
    void BF1( ) ;
    protected : int B1 ;
                void BF2 ( ) ;
    public: int C1;
                void BF3( );
}ob1;

Class Middle : private Base
{ int A2 ;
    protected : int B2 ;
                void MF1 ( ) ;
    public: int C2;
                void MF2( );
}ob2;

Class Derived : protected Middle
{ void DF1( ) ;
    int A3;
    public:    int B3;

```

```
void DF2( );  
}ob3;
```

- (i) Name the member functions accessible by the objects of Derived .
- (ii) Name the data members that are accessible in function DF1() .
- (iii) What would be the size of class Derived objects ?
- (iv) Name the data members that are accessible in Function F1() .

6. Answer the questions (i) to (iv) based on the following code :

```
class Teacher  
{  
  
char TNo[5], TName[20], DeptfIO;  
int Workload;  
  
protected:  
float Salary;  
  
void AssignSal(float);  
public:  
  
Teacher( ) ;  
void TEntry( ) ;  
void TDisplay( ) ;  
};  
class Student  
{  
  
char Admno[10], SName[20], Stream[10];  
protected:  
  
int Attendance, TotMarks;  
public:  
  
Student( ); void  
SEntry( ); void  
SDisplay( ); };  
  
class School : public Student, public Teacher  
};  
  
char SCode[10], SchName[20];  
public:  
School ( ) ;  
void SchEntry( );
```

```
void SchDisplay( );  
};
```

- (i) Which type of Inheritance is depicted by the above example ?
- (ii) Identify the member function(s) that cannot be called directly from the objects of class School from the following :

```
TEntry( )  
SDisplay( )  
SchEntry( )
```

(iii) Write name of all the member(s) accessible from member functions of class School.

(iv) If class School was derived privately from class Teacher and privately from class Student, then, name the member function(s) that could be accessed through Objects of class School.

7. Answer the questions (i) to (iv) based on the following code :(4)

```
class Goods  
{  
    int id;  
    protected :  
    char name[20];  
    long qty;  
    void Incr(int n);  
    public :  
    Goods();  
    ~Goods();  
    void get();  
};  
class Food_products : protected Goods  
{  
    char exp_dt[10];  
    protected :  
    int id;  
    int qty;  
    public :
```

```

        void getd();
        void showd();
};
class Cosmetics : private Goods
{
    int qty;

    char exp_date[10];
    protected :

    int id;
    public :
    ~Cosmetics();

    Cosmetics();
    void show();

};

```

- (i) Name the all protected members of class Food_products.
- (ii) Name the member functions accessible through the object of class Food_products.
- (iii) From the following, Identify the member function(s) that cannot be called directly from the object of class Cosmetics
 - show()
 - getd()
 - get()
- (iv) If the class cosmetics inherits the properties of food_products class also, then name the type of inheritance.

8. Consider the following declarations and answer the questions given below:

```

class Mydata
{ protected:
    int data;
    public:
    void Get_mydata(int);
    void Manip_mydata(int);
    void Show_mydata(int);
    Mydata( );
    ~Mydata( ); }; class
Personal_data

```



```

{
    protected:
    int data1;
    public:
    void Get_personaldata(int);
    void Show_personaldata(int);
    Mydata1();
    ~Mydata1();
};
class Person: public Mydata, Personal_data
{
    public:
    void Show_person(void);
    person();
    ~person();
};

```

- i) How many bytes will be required by an object belonging to class Person?
- ii) Which type of inheritance is depicted in the above example?
- iii) List the data members that can be accessed by the member function Show_person()
- iv) What is the order of constructor execution at the time of creating an object of class Person?

9. Define a class named **ADMISSION** in C++ with the following descriptions:

Private members:

AD_NO integer (Ranges 10 - 2000)

NAME Array of characters (String)

CLASS Character

FEES Float

Public Members:

Function Read_Data () to read an object of **ADMISSION** type

Function Display() to display the details of an object

Function Draw_Nos () to choose 2 students randomly.

And display the details. Use random function to generate admission nos. to match with AD_NO.

10. Define a class **Employee** in C++ with the following specification:

Private Members:

ename an array of char of size[50] (represent employee name)

deptname an array of char of size[20] (represent department name)

salary integer (represent total salary of an employee)

bonus float

CalBonus() This function calculate the total bonus given to an employee according to following conditions

Deptname	Bonus
Accounts	4 % of salary
HR	5% of salary
IT	2% of salary
Sales	3% of salary
Marketing	4% of salary

Public Members:

Constructor to initialise ename and deptname to NULL and salary and bonus to 0.

A function read_info to allow user to enter values for ename, deptname,salary & Call function CalBonus() to calculate the bonus of an employee.

A Function disp_info() to allow user to view the content of all the data members

11. Define a class **Directory** with the following Specification:

Private members:

Docunames an array of string 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

Newdocumentry() A function to accept values of Docunames, Freespace and Occupied from user.

Retfreespace() A function that returns the values of total kilobytes

available (1 Kilobyte= 1024 bytes) Showfiles () A function that display the names of all the documents in

directory

12. Find the output of the following program:

```

a. #include<iostream.h>
    void main()
    { long Number = 7583241;
      int First=0, Second=0; do

      { int R=Number%10; if
        (R%2==0) First+=R;

        else
          Second+=R;
        Number /=10;
      } while (Number>0);
      cout<<First-Second;
    }

```

```

b. #include<string.h>
    #include<iostream.h>
    #include<ctype.h>
    void change(char msg[ ], int len)
    {
      for( int count=0;count< len;count++)
      {
        if(islower(msg[ count]))
          msg[count]=toupper(msg[count]);
        else if(isupper(msg[ count]))
          msg[count]=tolower(msg[count]);
        else if(isdigit(msg[ count]))
          msg[count]=msg[count]+1;
        else
          msg[count]= '*';
      }
    }
    void main( )
    {
      char message[ ]= " 15th August CelebratED";

```

```

int size= strlen( message);
change(message,size);
cout<<message<<endl;
for( int c=0,,r=size-1;c<=size/2; c++,r--)
{
    char temp=message[c];
    message[c]=message[r];
    message[r]=temp;
}
cout<<message<<endl;

```

c.

```

#include<iostream.h>
int func( int &x,int y=10)
{
    if(x%y==0) return ++X; else return y- -;
}

void main( )
{
    int p=20, q=23;
    q= func(p,q);

    cout<<p<<q<<endl;
    p= func(q);
    cout<<p<<q<<endl;
    q= func(p);
    cout<<p<<q<<endl;
}

```

d.

```

# include < iostream.h>
void Withdef (int HisNum = 30)
{
    for (int l=20 ; l<*= HisNum; l+=5)
    cout<<l<<" ";
    cout<<endl;
}

void Control (int &MyNum)

```

```

{
MyNum+=10;
Withdef(MyNum);
}
void main ()
{
int YourNum=20;
Control (YourNum);
Withdef();
cout<<"Number="<<YourNum<<endl;
}

```

```

e. #include <iostream.h>
struct Pixel
{
int c,r;
};
void display(Pixel p)
{
cout<<"Col "<<p.c<<" Row "<<p.r<<endl;
}
void main()
{
Pixel x = {40,50}, y,
z; z= x;
x.c = x.c + 10;
y = z;
y.c = y.c + ;
y.r = y.r + 20;
z.c = z.c - 15;
display(x);
display(y);
display(z);
}

```

13. Rewrite the following program after removing the syntactical error , if any. Under line each correction.

```
i) #include<iostream.h>
   const int Devidor 5;
   void amin( )
   {
       Number=15; for(int count=1;
       count<=5;count++) if( Number/ Devidor= = 0)
       cout<<Number/Devidor; cout<<endl;
   Else
       cout<< Number+Devidor<<endl;
```

```
ii) # include <iostream.h>
   const int Max 10;
   void main ( )
   {
       int Numbers [Max];

       Numbers = { 20, 50,10, 30,40 } ;
       for (Loc= Max-1 ; Loc > = 0 ; Loc - -)
       cout>>Numbers [Loc]; }
```

14. In the following C++ program what is the expected value of Myscore from Options (i) to (iv) given below. Justify your answer.

```
a. #include<stdlib.h>
   #include<iostream.h>
   void main( )
   {
       randomize();

       int Score[] = {25,20,34,56, 72, 63}, Myscore;
       Myscore = Score[2 + random(2)];
       cout<<Myscore<<endl; }
```

(i) 25

(ii) 34

(iii) 20

(iv) None of the above

b. Observe the following program RANDNUM.CPP carefully. If the value of VAL entered by the user is 10, choose the correct possible output(s) from the options from i) to iv) and justify your option.

```
//program RANDNUM.CPP
#include<iostream.h>
#include<stdlib.h>
#include<time.h>
void main()
{
    randomize();
    int VAL, Rnd; int n=1;
    cin>>VAL;
    Rnd=8 + random(VAL) * 1;
    while(n<=Rnd)
    {
        cout<<n<< "\t";
        n++;
    }
}
```

output options:

i) 1 2 3 4 5 6 7 8 9 10 11 12 13

ii) 0 1 2 3

iii) 1 2 3 4 5

iv) 1 2 3 4 5 6 7 8

15. Define the following:

- a) Primary Key b) Candidate Key c) Alternate Key d) Foreign Key e) Tuple
f) Attribute g) Cardinality h) Degree i) Relation.

16. List any four advantages of DBMS.

17. List any for RDBMS packages.

18. Answer the questions i) and ii) after going through the following class :

```

#include<iostream.h>
#include<string.h>
#include<stdio.h>
class wholesale
{ char categ[20],item[30];
  float pr;
  int qty;
      wholesale( )           // Function 1
      { strcpy(categ,"Food");
        strcpy(item,"Biscuits");
        pr=150.00;
        qty=10 }
  public :
      void SHOW( )           //Function 2
      {
        cout<<categ<<"#"<<item<<":"<<pr<<"@"<<qty<<endl;
      }
      };
void main( )
{ wholesale ob;           //Statement 1
  ob.SHOW( );           //Statement 2
}

```

i) Will **statement 1** initialize all the data members for object **ob** with the values given in **function 1**?(Y/N). Justify your answer suggesting the corrections to be made in the above code.

ii) What shall be the possible output when the program gets executed? (Assuming, if required- the suggested correction(s) are made in the program.

19. Answer the questions (i) and (ii) after going through the following program:

```

class Match
{ int Time;
  public:

```



```

Match() //Function 1
{
    Time = 0;
    cout<<"Match commences "<<endl;
}
void Details() //Function 2
{
    cout<<"Inter Section Basketball Match"<<endl;
}
Match(int Duration) //Function 3
{
    Time = Duration;
    cout<<"Another match begins now"<<endl;
}
Match(Match &M) //Function 4
{
    Time = M.Duration;
    Cout<<"Like Previous Match"<<endl;
}
};

```

- i) Which category of constructor – Function 4 belongs to and what is the purpose of using it?
- ii) Write statements that would call the member Functions 1 and 3.

20. Revise the notes of Networking & Boolean Algebra.