**Q. What are the programming paradigms before the object oriented programming? What are the drawbacks to those programming paradigms?**

There are the following paradigms used before object oriented programming: →

**(1) MONOLITHIC PROGRAMING**: →

In the monolithic programming language such as BASIC and assembly language the data variables declared are global and statements are written in sequence. The program contains jumping statements such as ‘goto’, that transfer control to any statement as specified in it. The global data can be accessed from any portion of the program due to this reason the data is fully protected. The concept of sub programs does not exist hence it is useful for smaller program.

**(2)PROCEDURAL PROGRAMMING**: →

In procedural programming languages such as FORTRAN & COBOL, programs are divided into a numbers of segments known as sub programs. Thus if focuses on function a part from data here also the data is not fully protected.

* The control to program is transferred using unsafe ‘goto’ statement.
* Data is global and all sub programs share the same data.
* These language are used for developing medium size applications.

**(3)STRUCTURE PROGRAMMING**: →

In structure programming languages such as Pascal & C,larger programs are developed. These programs are divided into multiple sub modules and procedures.

* Each module has its own set of local variables and program code.
* Each procedure has to perform different task.
* User defined data type are introduced.

Following are the drawbacks observed in monolithic, procedural and structured programming languages.

* Large size programs are divided into smaller programs known as functions are these functions can call one another hence security is not provided.
* Importance is not given to security of data but on doing things (program).
* Data passes globally from one function to another.
* Most functions can across global data.

**NESTED CLASS**

When a class declared inside another class then the inner class is nested class of outer. We can use data member of inner class using dot operator with their objects. We can make the class nested by two methods firstly declare the whole class with object inside another class and secondly we declare only object of a class into another class.

Q1. Write a program to enter a record of student where address class should be nested into student class.

ADDRESS

STUDENT

#include<iostream.h>

#include<conio.h>

#include<string.h>

#include<stdio.h>

class address

{

private:

char vill[30],tn[30],ps[30],po[30],dis[30],st[30];

public:

void addin();

void addout();

};

class student

{

private:

int roll,m,h,e,t;

char name[20],div[10];

float per;

address a1;

public:

void input();

void output();

};

void address::addin()

{

cout<<"\n Enter Name of Village :";

cin>>vill;

cout<<"\n Enter Name of Town :";

cin>>tn;

cout<<"\n Enter Name of Police Station :";

cin>>ps;

cout<<"\n Enter Name of Post Office :";

cin>>po;

cout<<"\n Enter Name of District :";

cin>>dis;

cout<<"\n Enter Name of State :";

cin>>st;

}

void address::addout()

{

cout<<"\n Name of Village is"<<vill;

cout<<"\n Name of Town is"<<tn;

cout<<"\n Name of Police Station is"<<ps;

cout<<"\n Name of Post Office is"<<po;

cout<<"\n Name of District is"<<dis;

cout<<"\n Name of State is"<<st;

}

void student::input()

{

cout<<"\n Enter roll number :";

cin>>roll;

cout<<"\n Enter Name of student :";

gets(name);

a1.addin();

a:

cout<<"\n Enter Marks of Maths :";

cin>>m;

if(m<0 || m>100)

{

cout<<"\n Wrong entry! Please enter correct marks";

goto a;

}

b:

cout<<"\n Enter Marks of Hindi :";

cin>>h;

if(h<0 || h>100)

{

cout<<"\n Wrong entry! Please enter correct marks";

goto b;

}

c:

cout<<"\n Enter Marks of English :";

cin>>e;

if(e<0 || e>100)

{

cout<<"\n Wrong entry! Please enter correct marks";

goto c;

}

t=m+h+e;

per=(float)t/3;

if(per<33)

{

strcpy(div,"FAILED");

}

if(per>=33 && per<45)

{

strcpy(div,"THIRD");

}

if(per>=45 && per<60)

{

strcpy(div,"SECOND");

}

if(per>=60)

{

strcpy(div,"FIRST");

}

}

void student::output()

{

cout<<"\n Roll number ="<<roll;

cout<<"\n Name of student ="<<name;

a1.addout();

cout<<"\n Marks of Maths ="<<m;

cout<<"\n Marks of Hindi ="<<h;

cout<<"\n Marks of English ="<<e;

cout<<"\n Total marks ="<<t;

cout<<"\n Percent of marks ="<<per;

cout<<"\n Division = "<<div;

}

void main()

{

clrscr();

student s;

cout<<"\n Size of object = "<<sizeof(s);

s.input();

s.output();

getch();

}

Q2. Write a program to enter a record of student where address class should be nested into admission class and admission class should be nested into student class.

ADDRESS

STUDENT

ADMISSION

#include<iostream.h>

#include<conio.h>

#include<string.h>

#include<stdio.h>

class address

{

private:

char vill[30],tn[30],ps[30],po[30],dis[30],st[30];

public:

void addin();

void addout();

};

class admission

{

private:

int admo,pfm;

char piname[30];

float pfper;

address a;

public:

void admin();

void admout();

};

class student

{

private:

int roll,m,h,e,t;

char name[20],div[10];

float per;

admission a1;

public:

void input();

void output();

};

void address::addin()

{

cout<<"\n Enter Name of Village :";

cin>>vill;

cout<<"\n Enter Name of Town :";

cin>>tn;

cout<<"\n Enter Name of Police Station :";

cin>>ps;

cout<<"\n Enter Name of Post Office :";

cin>>po;

cout<<"\n Enter Name of District :";

cin>>dis;

cout<<"\n Enter Name of State :";

cin>>st;

}

void address::addout()

{

cout<<"\n Name of Village is"<<vill;

cout<<"\n Name of Town is"<<tn;

cout<<"\n Name of Police Station is"<<ps;

cout<<"\n Name of Post Office is"<<po;

cout<<"\n Name of District is"<<dis;

cout<<"\n Name of State is"<<st;

}

void admission::admin()

{

cout<<"\n Enter Admission number :";

cin>>admno;

cout<<"\n Enter Previous school or institution's name :";

gets(piname);

cout<<"\n Enter Final marks of previous class :";

cin>>pfm;

cout<<"\n Enter Percent of final marks of previous class :";

cin>>pfper;

a.addin();

}

void admission::admout()

{

cout<<"\n Admission number ="<<admno;

cout<<"\n Previous school or institution's name is"<<piname;

cout<<"\n Final marks of previous class ="<<pfm;

cout<<"\n Percent of final marks of previous class ="<<pfper;

a.addout();

}

void student::input()

{

cout<<"\n Enter roll number :";

cin>>roll;

cout<<"\n Enter Name of student :";

gets(name);

a1.admin();

cout<<"\n Enter Marks of Maths :";

cin>>m;

cout<<"\n Enter Marks of Hindi :";

cin>>h;

cout<<"\n Enter Marks of English :";

cin>>e;

t=m+h+e;

per=(float)t/3;

if(per<33)

{

strcpy(div,"FAILED");

}

if(per>=33 && per<45)

{

strcpy(div,"THIRD");

}

if(per>=45 && per<60)

{

strcpy(div,"SECOND");

}

if(per>=60)

{

strcpy(div,"FIRST");

}

}

void student::output()

{

cout<<"\n Roll number ="<<roll;

cout<<"\n Name of student ="<<name;

a1.admout();

cout<<"\n Marks of Maths ="<<m;

cout<<"\n Marks of Hindi ="<<h;

cout<<"\n Marks of English ="<<e;

cout<<"\n Total marks ="<<t;

cout<<"\n Percent of marks ="<<per;

cout<<"\n Division = "<<div;

}

void main()

{

clrscr();

student s;

cout<<"\n Size of object = "<<sizeof(s);

s.input();

s.output();

getch();

}

Q3. Write a program to enter a record of student and employee where addressclass should be nested into student class as well as employee class.

ADDRESS

STUDENT

EMPLOYEE

#include<iostream.h>

#include<conio.h>

#include<string.h>

#include<stdio.h>

class address

{

private:

char vill[30],tn[30],ps[30],po[30],dis[30],st[30];

public:

void addin();

void addout();

};

class student

{

private:

int roll,m,h,e,t;

char name[20],div[10];

float per;

address a1;

public:

void input();

void output();

};

class employee

{

private:

int eno;

float sal,ta,da,hra,tax,g,pay;

char name[30];

address a;

public:

void empin();

void empout();

};

void main()

{

clrscr();

student s;

employee e;

cout<<"\n Enter Record of Student :";

s.input();

s.output();

cout<<"\n Press any key to enter record of Employee :";

getch();

clrscr();

e.empin();

e.empout();

getch();

}

void address::addin()

{

cout<<"\n Enter Name of Village :";

cin>>vill;

cout<<"\n Enter Name of Town :";

cin>>tn;

cout<<"\n Enter Name of Police Station :";

cin>>ps;

cout<<"\n Enter Name of Post Office :";

cin>>po;

cout<<"\n Enter Name of District :";

cin>>dis;

cout<<"\n Enter Name of State :";

cin>>st;

}

void address::addout()

{

cout<<"\n Name of Village is"<<vill;

cout<<"\n Name of Town is"<<tn;

cout<<"\n Name of Police Station is"<<ps;

cout<<"\n Name of Post Office is"<<po;

cout<<"\n Name of District is"<<dis;

cout<<"\n Name of State is"<<st;

}

void student::input()

{

cout<<"\n Enter roll number :";

cin>>roll;

cout<<"\n Enter Name of student :";

gets(name);

a1.addin();

a:

cout<<"\n Enter Marks of Maths :";

cin>>m;

if(m<0 || m>100)

{

cout<<"\n Wrong entry! Please enter correct marks";

goto a;

}

b:

cout<<"\n Enter Marks of Hindi :";

cin>>h;

if(h<0 || h>100)

{

cout<<"\n Wrong entry! Please enter correct marks";

goto b;

}

c:

cout<<"\n Enter Marks of English :";

cin>>e;

if(e<0 || e>100)

{

cout<<"\n Wrong entry! Please enter correct marks";

goto c;

}

t=m+h+e;

per=(float)t/3;

if(per<33)

{

strcpy(div,"FAILED");

}

if(per>=33 && per<45)

{

strcpy(div,"THIRD");

}

if(per>=45 && per<60)

{

strcpy(div,"SECOND");

}

if(per>=60)

{

strcpy(div,"FIRST");

}

}

void student::output()

{

cout<<"\n Roll number ="<<roll;

cout<<"\n Name of student ="<<name;

a1.addout();

cout<<"\n Marks of Maths ="<<m;

cout<<"\n Marks of Hindi ="<<h;

cout<<"\n Marks of English ="<<e;

cout<<"\n Total marks ="<<t;

cout<<"\n Percent of marks ="<<per;

cout<<"\n Division = "<<div;

}

void employee::empin()

{

cout<<"\n Enter Employee number :";

cin>>eno;

cout<<"\n Enter Employee name :";

gets(name);

a.addin();

cout<<"\n Enter Basic Salary :";

cin>>sal;

if(sal<10000)

{

ta=sal\*10/100;

da=sal\*15/100;

hra=sal\*10/100;

tax=sal\*0/100;

}

if(sal>=10000 && sal<50000)

{

ta=sal\*15/100;

da=sal\*25/100;

hra=sal\*18/100;

tax=sal\*5/100;

}

if(sal>=50000)

{

ta=sal\*20/100;

da=sal\*35/100;

hra=sal\*20/100;

tax=sal\*10/100;

}

g=sal+ta+da+hra;

pay=g-tax;

}

void employee::empout()

{

cout<<"\n Employee number = "<<eno;

cout<<"\n Name of Employee = "<<name;

a.addout();

cout<<"\n Basic Salary ="<<sal;

cout<<"\n Travelling Allowence :"<<ta;

cout<<"\n Dearness Allowence :"<<da;

cout<<"\n House Rent Allowence :"<<hra;

cout<<"\n TAX = "<<tax;

cout<<"\n Gross = "<<g;

cout<<"\n Payment ="<<pay;

}