OOP Lab – 08

In lab done: Q1,Q3  
After lab done: Q2,Q4,Q5

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**Q1**

//23K2001 Q1

#include<iostream>

using namespace std;

class employee{

protected:

string name;

int num;

int age;

public:

employee(string n,int no,int a) : name(n),num(no),age(a){}

void display()

{

cout<<"Name: "<<getName()<<endl;

cout<<"Phone#"<<getNum()<<endl;

cout<<"Age: "<<getAge()<<endl;

}

void setName(string n)

{

name = n;

}

void setNum(int n)

{

num = n;

}

void setAge(int n)

{

age = n;

}

string getName()

{

return name;

}

int getNum()

{

return num;

}

int getAge()

{

return age;

}

};

class manager : public employee{

protected:

string title;

float due;

public:

manager(string n,int no,int a,string t,float due) : employee(n,no,a), title(t),due(due){

}

void display()

{

employee::display();

cout<<"Title: "<<getTitle()<<endl;

cout<<"Dues: "<<getDue()<<"\n"<<endl;

}

void setTitle(string n)

{

title = n;

}

void setDue(float n)

{

due = n;

}

string getTitle()

{

return title;

}

float getDue()

{

return due;

}

};

class scientist : public employee{

protected:

string title,publication;

public:

scientist(string n,int no,int a,string t,string p) : employee(n,no,a), title(t),publication(p){

}

void display()

{

employee::display();

cout<<"Title: "<<getTitle()<<endl;

cout<<"Publication: "<<getPub()<<"\n"<<endl;

}

void setTitle(string n)

{

title = n;

}

void setPub(string n)

{

publication = n;

}

string getTitle()

{

return title;

}

string getPub()

{

return publication;

}

};

class laborer : public employee{

protected:

string title;

public:

laborer(string n,int no,int a,string t) : employee(n,no,a), title(t){

}

void display()

{

employee::display();

cout<<"Title: "<<getTitle()<<endl;

}

void setTitle(string n)

{

title = n;

}

string getTitle()

{

return title;

}

};

int main()

{

manager muz("Muzammil Siddiqui",92306223,18,"Production Manager",56000.754);

scientist hathi("Dr. Hathi Raja",97445621,44,"Lead Scientist","Atomic Model");

laborer taha("M. Taha",92300561,19,"Lab Instructor");

muz.display();

hathi.display();

taha.display();

return 0;

}

**Q2**

//23K2001 Q2

#include<iostream>

using namespace std;

class account{

protected:

double balance;

public:

account(double balance) : balance(balance){

if(balance<0)

{

balance = 0.0;

cout<<"Invalid initial balance set, now it is set to 0.0!"<<endl;

}

}

void credit(double amount)

{

balance+=amount;

cout<<"Amount deposit successfully"<<endl;

}

bool debit(double amount)

{

if(amount<=balance)

{

balance-=amount;

cout<<"Amount withdraw successfully"<<endl;

return true;

}

else

{

cout<<"Debit exceeded user account balance!"<<endl;

return false;

}

}

double getBalance()

{

return balance;

}

};

class savAccount : public account{

protected:

double interest;

public:

savAccount(double bal,double I) : account(bal), interest(I){}

double calcInterest()

{

return interest\*getBalance();

}

};

class checkAcc : public account{

protected:

double fee;

public:

checkAcc(double bal, double fee) : account(bal),fee(fee){}

void credit(double amount)

{

account::credit(amount-fee);

cout<<"(Fee deducted successfully)"<<endl;

}

bool debit(double amount)

{

// if(account::debit(amount)==true)

// {

// if(account::debit(fee)==true)

// cout<<"(Fee deducted successfully)"<<endl;

// else

// cout<<"(Not enough balance for fees)"<<endl;

// }

if(account::debit((amount+fee))==true)

{

cout<<"(Fee deducted successfully)"<<endl;

}

else

cout<<"Insufficient balance!"<<endl;

}

};

int main()

{

account muz(34600.56908);

savAccount s1(8950.2378,0.25);

checkAcc c1(6720.9054,160.10);

cout<<"Functions for account class: "<<endl;

muz.credit(450.90);

muz.debit(5000.2350);

cout<<"Balance: "<<muz.getBalance()<<endl;

cout<<"\nFunctions for savingAccount class: "<<endl;

s1.credit(520.963);

s1.debit(10000);

cout<<"Balance: "<<s1.getBalance()<<endl;

cout<<"Interest: "<<s1.calcInterest()<<endl;

s1.credit(s1.calcInterest());

cout<<"Balance after added interest: "<<s1.getBalance()<<endl;

cout<<"\nFunctions for checkAccount class: "<<endl;

c1.credit(1400.87);

c1.debit(500.490);

cout<<"Balance: "<<c1.getBalance()<<endl;

return 0;

}

**Q3**

//23K2001 Q3

#include<iostream>

using namespace std;

class employee{

protected:

string name,id;

float salary;

int age;

public:

employee(string n,string d,float sal,int a) : name(n),id(d),salary(sal),age(a){}

void display()

{

cout<<"Name: "<<getName()<<endl;

cout<<"Age: "<<getAge()<<endl;

cout<<"Salary: "<<getSalr()<<endl;

cout<<"EmpID: "<<getID()<<endl;

}

void setName(string n)

{

name = n;

}

void setSalr(float n)

{

salary = n;

}

void setAge(int n)

{

age = n;

}

void setID(string id)

{

this->id = id;

}

string getName()

{

return name;

}

float getSalr()

{

return salary;

}

int getAge()

{

return age;

}

string getID()

{

return id;

}

};

class faculty : public employee{

private:

string department,subjects;

public:

faculty(string n, string id, float sal,int age, string d,string subs) : employee(n,id,sal,age), department(d),subjects(subs){

}

void setD(string d)

{

department = d;

}

void setSub(string sub)

{

subjects = sub;

}

string getD()

{

return department;

}

string getSub()

{

return subjects;

}

void display()

{

employee::display();

cout<<"Department: "<<getD()<<endl;

cout<<"Teaching subjects: "<<getSub()<<"\n"<<endl;

}

};

class admin : public employee{

private:

string pos,location;

public:

admin(string name, string id, float sal,int age, string p,string l) : employee(name,id,sal,age), pos(p),location(l){

}

void setPos(string p)

{

pos = p;

}

void setLoc(string l)

{

location = l;

}

string getPos()

{

return pos;

}

string getLoc()

{

return location;

}

void display()

{

employee::display();

cout<<"Position: "<<getPos()<<endl;

cout<<"Office location: "<<getLoc()<<"\n"<<endl;

}

};

class teachingAssistant : public faculty, public admin{

public:

teachingAssistant(string na,string ide,float sal,int age,string d,string subs,string pos,string loc): faculty(na,ide,sal,age,d,subs),admin(na,ide,sal,age,pos,loc)

{}

void display()

{

faculty::display();

admin::display();

}

};

int main()

{

faculty cs("Sir Asif","CS-119245",120000,36,"CS","OOP, PF");

admin a("Dr. Fazal Hassan","AA-56721",200000,45,"HOD","CS Ground Floor Offices");

teachingAssistant muz("Muzammil Siddiqui","23K-2001",15000,18,"BSCS","Programming Fundamentals","Teaching-Assistant","EE 3rd Floor");

cs.display();

a.display();

muz.display();

return 0;

}

**Q4**

//23K2001 Q4

#include<iostream>

using namespace std;

class person{

private:

int age;

protected:

string name;

public:

person(int age,string name) : age(age), name(name){}

int getAge() const

{

return age;

}

string getName() const

{

return name;

}

};

class employee{

private:

string empid;

protected:

float salary;

public:

employee(string empid,float salary):empid(empid),salary(salary){}

string getID() const

{

return empid;

}

float getSalary() const

{

return salary;

}

};

class manager : public person, public employee{

private:

string type;

public:

manager(int a,string n,string id,float s,string t):person(a,n),employee(id,s),type(t){}

string getType() const

{

return type;

}

};

class ITmanager : public manager{

private:

int num;

public:

ITmanager(int a,string n,string id,float s,string t,int no) : manager(a,n,id,s,t),num(no){}

void display() const

{

cout<<"Name: "<<getName()<<endl;

cout<<"Age: "<<getAge()<<endl;

cout<<"Emp-ID#: "<<getID()<<endl;

cout<<"Type: "<<getType()<<endl;

cout<<"Salary: "<<getSalary()<<endl;

cout<<"No# of persons: "<<num<<endl;

}

};

int main()

{

ITmanager Bashir(29,"Bashir Pasha","NU239081-KHI",57000.650,"Permanent",4);

Bashir.display();

return 0;

}

**Q5**

//23K2001 Q5

#include<iostream>

using namespace std;

class animal{

protected:

int age;

string size;

public:

animal(){

age = 0;

size = "";

}

animal(int age,string size):age(age),size(size){}

void setAge(int a)

{

age = a;

}

void setSize(string s)

{

size = s;

}

int getAge()

{

return age;

}

string getSize()

{

return size;

}

};

class dog : public animal{

private:

string breed;

public:

dog(){

breed = "";

}

dog(int a,string s,string b):animal(a,s),breed(b){}

void setBreed(string b)

{

breed = b;

}

string getBreed()

{

return breed;

}

};

class cat : public animal{

private:

int lives;

public:

cat(){

lives = 0;

}

cat(int a,string s,int l):animal(a,s),lives(l){}

void setLives(int l)

{

lives = l;

}

int getLives()

{

return lives;

}

};

int main()

{

dog skye;

dog betsy(2,"XL","Labrador");

cat timo;

cat gwen(3,"S",7);

cout<<"Dog (by default constructor):"<<endl;

cout<<"Age: "<<skye.getAge()<<endl;

cout<<"Size: "<<skye.getSize()<<endl;

cout<<"Breed: "<<skye.getBreed()<<endl;

cout<<"\nDog (by parameter constructor):"<<endl;

cout<<"Age: "<<betsy.getAge()<<endl;

cout<<"Size: "<<betsy.getSize()<<endl;

cout<<"Breed: "<<betsy.getBreed()<<endl;

cout<<"\nCat (by default constructor):"<<endl;

cout<<"Age: "<<timo.getAge()<<endl;

cout<<"Size: "<<timo.getSize()<<endl;

cout<<"Lives: "<<timo.getLives()<<endl;

cout<<"\nCat (by parameter constructor):"<<endl;

cout<<"Age: "<<gwen.getAge()<<endl;

cout<<"Size: "<<gwen.getSize()<<endl;

cout<<"Lives: "<<gwen.getLives()<<endl;

return 0;

}