ID: _____ NAME: _____ SECTION: _____

UNIVERSITY OF CENTRAL PUNJAB, LAHORE

Polymorphism

Course Title: Object Oriented Programming **University:** UCP

Course Instructor: Zeeshan Khan **Program Name:** BS(CS), BS(SE)

Semester: Fall 2022 **Date:** _____

Total marks: 20 marks (10+10) **Obtained Marks:** _____

Q1: Give answers of given questions.

1. **Differentiate between function overloading and overriding.**

1. **Discuss the magic of "virtual" in OOP. Why we need to make destructor virtual?**

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Q2: Dry Run following code and write the output.

Source code 2:

```
class TataSky {
   string str;
   public:
   TataSky(string a){ str = a; cout<<"TataSky. is ko laga dala to life jingalala..!\n";}
   virtual void display(){ cout<<"Data: "<<str<<endl; }
};
class Airtel : public TataSky{
public:
   Airtel(string a):TataSky(a){ cout<<"What an idae sir g..!\n";}
   void display(){TataSky::display(); cout<<"display() of class Airtel.\n";}
};
class NowYouSeeMe :public Airtel {
public:
   NowYouSeeMe(string a):Airtel(a){cout<<"The closer you look lesser you see..!\n";}
   void display(){Airtel::display(); cout<<"display() of class NowYouSeeMe.\n";}
};
int main(){
   NowYouSeeMe c("AbraKaabra");
   c.display();
   TataSky *ptr;
   ptr = new TataSky("Muje aik bat btao Pyare bhai..");
   ptr->display();
   ptr=&c;
   ptr->display();
   Airtel *bptr = static_cast<Airtel*>(ptr);
   bptr->display();
   Airtel b("Happy Reading"); b.display();
   return 0;
}//
```

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UNIVERSITY OF CENTRAL PUNJAB, LAHORE

Quiz-Inheritance

Course Title: Object Oriented Programming
Course Instructor: Zeeshan Khan
Semester: Fall 2022
University: UCP
Program Name: BS(CS), BS(SE)
Date: _____
Total marks: 10 marks
Obtained Marks: _____

A company has a software system that keeps track of different types of electronic devices. The system has a base class called "Device" that contains common properties and methods for all types of devices, such as the device name, manufacturer, and power status.

The "Device" class is then inherited by three other classes: "Computer", "Television", and "SmartDevice". The "Computer" class includes additional properties and methods specific to computers, such as the processor type and the amount of RAM. The "Television" class includes additional properties and methods specific to televisions, such as the screen size and the presence of a smart TV function. The "SmartDevice" class includes additional properties and methods specific to smart devices, such as the ability to connect to the internet and the presence of a virtual assistant.

The "SmartDevice" class is then further inherited by two more classes: "Smartphone" and "SmartSpeaker". The "Smartphone" class includes additional properties and methods specific to smartphones, such as the camera resolution and the ability to make phone calls. The "SmartSpeaker" class includes additional properties and methods specific to smart speakers, such as the speaker size and the presence of a voice assistant.

1. **Write the code for the diagram you just made. Test your code by writing the main function.**