**QUESTION:**

**A Computer Science department keeps track of its CS students using some custom software. Each student is represented by a Student object that features a pass() method that returns true if and only if the student has all 20 ticks to pass the year. The department suddenly starts teaching NS students, who only need 10 ticks to pass. Using inheritance and polymorphism, show how the software can continue to keep all Student objects in one list in code without having to change any classes other than Student.**

**CODE:**

**Student class**

**package** Java;

**public** **abstract** **class** Student{

**public** **abstract** **void** pass();

**int** ticks;

}

**NS class**

**package** Java;

**import** java.util.Scanner;

**public** **class** NS **extends** Student {

Scanner in = **new** Scanner(System.***in***);

@Override

**public** **void** pass() {

**int** ticks;

System.***out***.println("Input number of ticks for NS student: ");

ticks=in.nextInt();

**if** (ticks == 10){

System.***out***.println("PASS");

}

**else** {

System.***out***.println("FAIL");

}

}

}

**CS class**

**package** Java;

**import** java.util.Scanner;

**public** **class** CS **extends** Student {

Scanner in = **new** Scanner(System.***in***);

**public** String choice;

@Override

**public** **void** pass() {

**int** ticks;

System.***out***.println("Input number of ticks for CS student: ");

ticks = in.nextInt();

**if** (ticks == 20){

System.***out***.println("PASS");

}

**else** {

System.***out***.println("FAIL");

}

}

}

**Main class**

**package** Java;

**import** java.util.ArrayList;

**import** java.util.Scanner;

**public** **class** Main{

**public** **static** **void** main(String []args){

ArrayList<Student> stud = **new** ArrayList<>();

CS cs = **new** CS();

cs.pass();

stud.add(cs);

NS ns = **new** NS();

ns.pass();

stud.add(ns);

Scanner in = **new** Scanner(System.***in***);

**int** i=1;

**while** (i<10){

String choice = "";

System.***out***.println("Do you want to enter data for next student? (Y/N)");

cs.choice = in.nextLine();

**if** (cs.choice.equalsIgnoreCase ("Y")) {

System.***out***.println("Which department's Student data you want to enter? (NS/CS)");

choice = in.nextLine();

in.nextLine();

}

**if** (choice.equalsIgnoreCase ("NS")){

NS n = **new** NS();

n.pass();

stud.add(n);

}

**else** **if** (choice.equalsIgnoreCase ("CS")){

CS c = **new** CS();

c.pass();

stud.add(c);

}

**else**

**if** (cs.choice.equalsIgnoreCase ("N")){

**break**;

}

}

}

}