

**Obyektga yo'naltirilgan dasturlash (OOP-1) fanidan
yakuniy nazorat savollari**

Yo'nalish: ISE (Information system engineering)

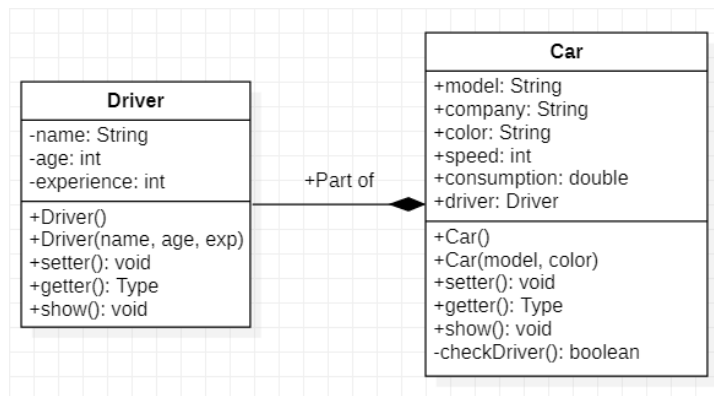
Topshiriq-1. Nazariy savollar uchun namunalar

1. Javada ma'lumotlar tiplari va o'zgaruvchilarni e'lon qilish qonuniyatlari. Misollar keltiring
2. Javada kiritish va chiqarish operatorlaridan foydalanish. Kiritish va chiqarish funksiyalarining qo'shimcha imkoniyatlari. Misollar keltiring
3. Javada shart va tanlash operatorlaridan foydalanish. Dasturda if, if...else, switch...case bloklaridan foydalanish. Misollar keltiring
4. Javada sikl operatorlaridan foydalanish. Cheksiz sikl va ichma-ich sikl yaratish. Misollar keltiring
5. Javada massivlar. Bir o'lchovli va ikki o'lchovli massivlar yaratish. Misollar keltiring
6. Javada satrlar bilan ishlash. String va StringBuilder sinfidan foydalanish, qo'shimcha metodlari. Misollar keltiring.
7. Javada sinflar va obyektlar. Sinf atributlari va metodlarini yaratish. Sinf konstruktorlari. Misollar keltiring.
8. Obyektga yo'naltirilgan dasturlashda encapsulation tamoyili. Dasturda public, private va protected kalit so'zlaridan foydalanish va ularning farqlari. Misollar keltiring
9. Obyektga yo'naltirilgan dasturlashda sinflar orasida munosabatlar o'rnatish. Munosabat turlari, sinflarda HAS-A, PART-OF bog'lanish turlari. Misollar keltiring
10. Obyektga yo'naltirilgan dasturlashda sinflar orasida vorislik tamoyili. Voris sinf yaratish. Vorisli turlari. Misollar keltiring
11. Obyektga yo'naltirilgan dasturlashda polymorphism tamoyili. Sinf ichida metodlarni qayta yuklash (method overloading). Misollar keltiring.
12. Obyektga yo'naltirilgan dasturlashda polymorphism tamoyili. Sinf ichida metodlarni qayta yozish (method overriding). Misollar keltiring.
13. Obyektga yo'naltirilgan dasturlashda abstraktlik tamoyili. Java muhitida abstrakt metod va abstrakt sinflar yaratish. Abstrakt sinf xususiyatlarini misollar asosida tushuntiring.
14. Abstrakt sinf va interfeys tushunchasi. Java muhitida abstrakt sinf va interfeysdan foydalanish, ularning o'zaro farqini tushuntiring. Misollar keltiring.
15. Java muhitida package lar bilan ishlash
16. Java muhitida istisnolarni boshqarish. Try, catch, throw, throws, finally kalit so'zlaridan foydalanib istisnolarni boshqarish. Misollar keltiring
17. Java muhitida fayllar bilan ishlash. File sinfi va faylga ma'lumot yozish sinflaridan foydalanish (FileOutputStream, FileWriter)
18. Java muhitida fayllar bilan ishlash. File sinfi va fayldan ma'lumot o'qish sinflaridan foydalanish (FileInputStream, FileReader, BufferedReader)

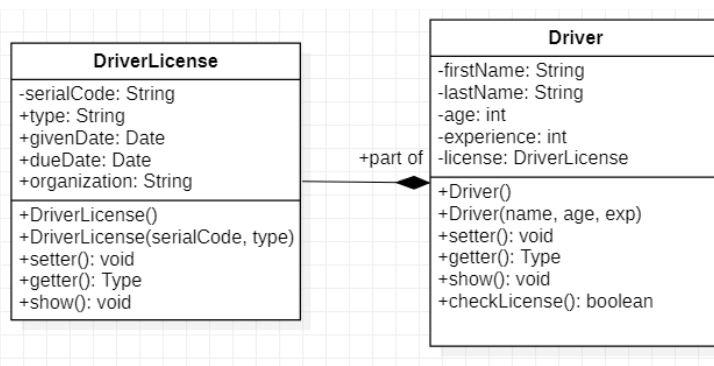
Izoh: Birinchi savol uchun eng yuqori ball: 10

Topshiriq-2. Sinflar va sinflar orasida munosabatlar. Amaliy topshiriq uchun namunaviy savollar

1. Quyidagi chizmada keltirilgan Driver (*name, age, experience*) va Car (*model, company, color, speed, consumption, driver*) sinflarni yarating va ular orasidagi bog'lanishni hosil qiling.

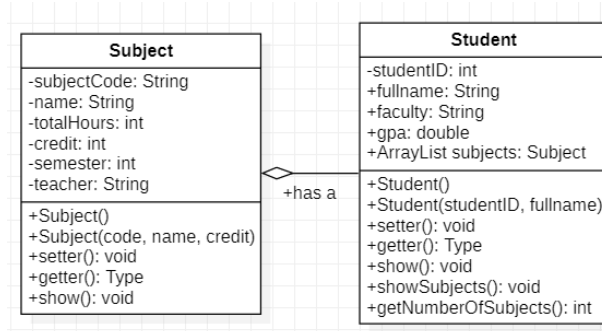


- a) Driver sinfini rasmda berilgan atributlar asosida yarating
 - b) Driver sinfining konstruktor va metodlarini to'g'ri yarating
 - c) Car sinfini rasmda berilgan atributlari asosida yarating
 - d) Car sinfining konstruktor va metodlarini to'g'ri yarating
 - e) Driver va Car sinflari o'rtasida "composition" bog'lanish o'rnatish
 - f) chechDriver() metodi orqali "car" da "driver" bor yoki yo'qligini tekshiring, agar mavjud bo'lsa Car sinfining show() metodi ishlasin, aks holda "Ushbu avtotransport haydovchisi mavjud emas" degan xabar chiqarsin.
2. Quyidagi chizmada keltirilgan Driver (*firstName, lastName, age, experience, license*) va DriverLicense(*serialCode, type, givenDate, dueDate, organization*) sinflarni yarating va ular orasidagi bog'lanishni hosil qiling.

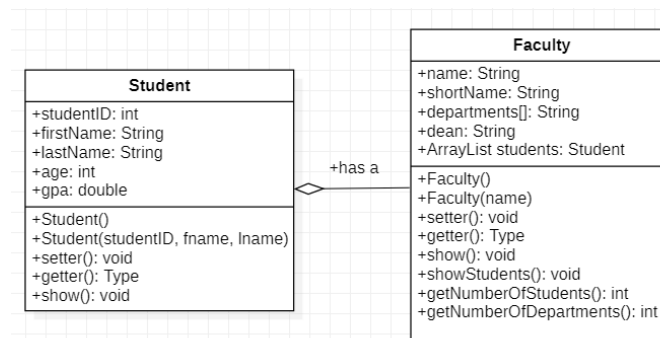


- a) Driver sinfini rasmda berilgan atributlar asosida yarating
- b) Driver sinfining konstruktor va metodlarini to'g'ri yarating
- c) DriverLicense sinfini rasmda berilgan atributlari asosida yarating
- d) DriverLicense sinfining konstruktor va metodlarini to'g'ri yarating
- e) Driver va DriverLicense sinflari o'rtasida "composition" bog'lanish o'rnatish
- f) chechLicense() metodi orqali "driver" da "license" bor yoki yo'qligini tekshiring, agar mavjud bo'lsa Driver sinfining show() metodi ishlasin, aks holda "Ushbu haydovchida haydovchilik guvohnomasi yo'q" degan xabar chiqarilsin.

3. Quyidagi chizmada keltirilgan Student (*studentID*, *fullName*, *faculty*, *gpa*, *ArrayList<Subject> subjects*) va Subject(*subjectCode*, *name*, *totalHours*, *credit*, *semester*, *teacher*) sinflarni yarating va ular orasidagi bog'lanishni hosil qiling.

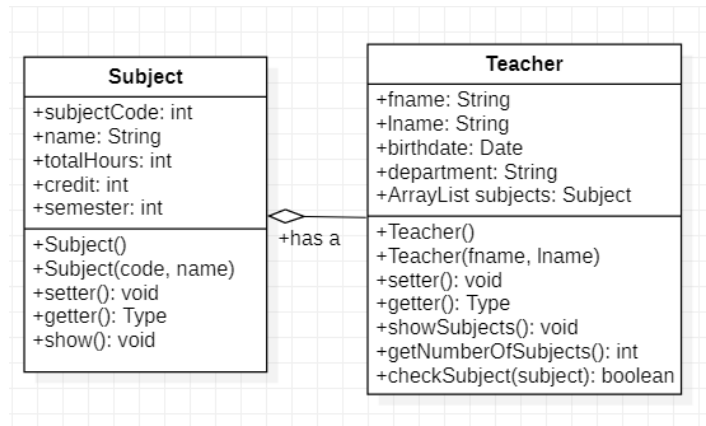


- Subject sinfini rasmda berilgan atributlar asosida yarating
 - Subject sinfining konstruktor va metodlarini to'g'ri yarating
 - Student sinfini rasmda berilgan atributlari asosida yarating
 - Student sinfining konstruktor va metodlarini to'g'ri yarating
 - Subject va Student sinflari o'rtasida "aggregation" bog'lanish o'rnatish
 - showSubjects() metodi orqali talabadagi mavjud fanlar ro'yhatini chiqaring, agar talabaga fan biriktirilmagan bo'lsa "fan mavjud emas" degan xabar chiqarilsin, getNumberOfSubjects() metodi orqali talabadagi fanlar sonini qaytaring.
4. Quyidagi chizmada keltirilgan Student (*studentID*, *firstName*, *lastName*, *age*, *gpa*) va Faculty(*name*, *shortName*, *departments[]*, *dean*, *ArrayList<Student> students*) sinflarni yarating va ular orasidagi bog'lanishni hosil qiling.

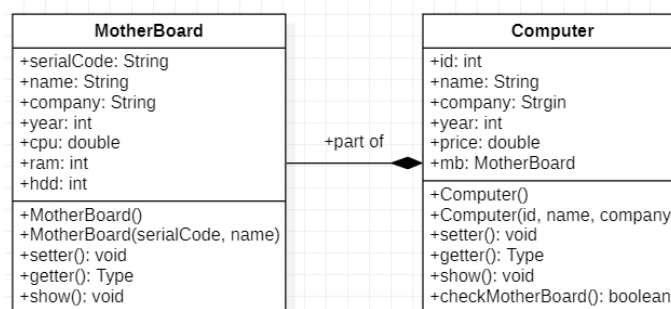


- Student sinfini rasmda berilgan atributlar asosida yarating
- Student sinfining konstruktor va metodlarini to'g'ri yarating
- Faculty sinfini rasmda berilgan atributlari asosida yarating
- Faculty sinfining konstruktor va metodlarini to'g'ri yarating
- Student va Faculty sinflari o'rtasida "aggregation" bog'lanish o'rnatish
- showStudents() metodi orqali fakultetdagi talabalar ro'yhatini chiqaring, agar fakultetga talabalar biriktirilmagan bo'lsa "talaba mavjud emas" degan xabar chiqarilsin, getNumberOfStudents() va getNumberOfDepartments() metodlari orqali mos ravishda fakultetdagi talabalar va kafedralar sonini qaytaring.

5. Quyidagi chizmada keltirilgan Subject (*subjectCode*, *name*, *totalHours*, *credit*, *semester*) va Teacher(*fname*, *lname*, *birthdate*, *department*, *ArrayList<Subject> subjects*) sinflarni yarating va ular orasidagi bog'lanishni hosil qiling.

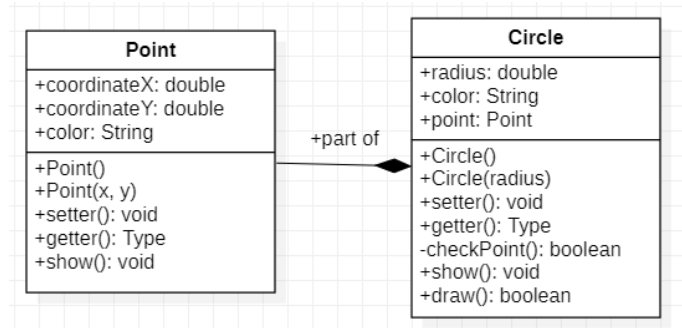


- Subject sinfini rasmda berilgan atributlar asosida yarating
 - Subject sinfining konstruktor va metodlarini to'g'ri yarating
 - Teacher sinfini rasmda berilgan atributlari asosida yarating
 - Teacher sinfining konstruktor va metodlarini to'g'ri yarating
 - Subject va Teacher sinflari o'rtasida "aggregation" bog'lanish o'rnatish
 - showSubjects() metodi orqali o'qituvchidagi mavjud fanlar ro'yhatini chiqaring, agar o'qituvchiga fan biriktirilmagan bo'lsa "ushbu o'qituvchida fan mavjud emas" degan xabar chiqarilsin, getNumberOfSubjects() metodi orqali o'qituvchiga biriktirilgan fanlar sonini qaytaring, checkSubject() metodi orqali o'qituvchida qaysidir fan borligini tekshiring.
6. Quyidagi chizmada keltirilgan MotherBoard (*serialCode*, *name*, *company*, *year*, *cpu*, *ram*, *hdd*) va Computer(*id*, *name*, *company*, *year*, *price*, *mb*) sinflarni yarating va ular orasidagi bog'lanishni hosil qiling.

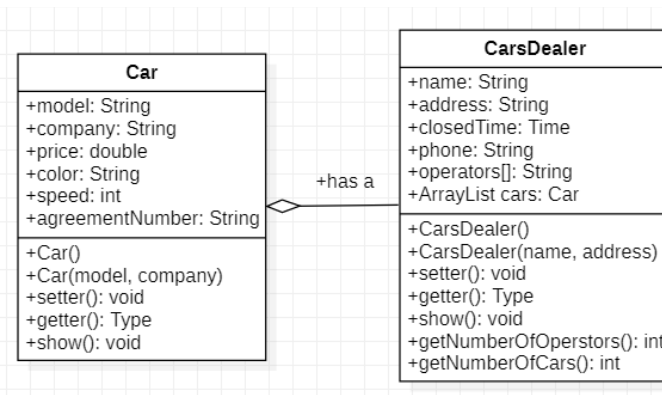


- MotherBoard sinfini rasmda berilgan atributlar asosida yarating
- MotherBoard sinfining konstruktor va metodlarini to'g'ri yarating
- Computer sinfini rasmda berilgan atributlari asosida yarating
- Computer sinfining konstruktor va metodlarini to'g'ri yarating
- MotherBoard va Computer sinflari o'rtasida "composition" bog'lanish o'rnatish
- checkMotherBoard() metodi orqali joriy "kompyuter"da "plata" bor yoki yo'qligini tekshiring, agar mavjud bo'lsa Computer sinfining show() metodi ishlasin, aks holda "Ushbu kompyuterda plata mavjud emas" degan xabar chiqarilsin.

7. Quyidagi chizmada keltirilgan *Point*(*coordinateX*, *coordinateY*, *color*) va *Circle*(*radius*, *color*, *point*) sinflarni yarating va ular orasidagi bog'lanishni hosil qiling.



- Point sinfini rasmda berilgan atributlar asosida yarating
 - Point sinfining konstruktor va metodlarini to'g'ri yarating
 - Circle sinfini rasmda berilgan atributlari asosida yarating
 - Circle sinfining konstruktor va metodlarini to'g'ri yarating
 - Point va Circle sinflari o'rtasida "composition" bog'lanish o'rnatish
 - checkPoint() metodi orqali joriy "aylana" ni chizish uchun "nuqta" bor yoki yo'qligini tekshiring, agar mavjud bo'lsa Circle sinfining draw va show() metodi ishlasin, aks holda "Aylana chizish uchun tekislikdagi nuqtani belgilang" degan xabar chiqarilsin.
8. Quyidagi chizmada keltirilgan *Car*(*model*, *company*, *price*, *color*, *speed*, *agreementNumber*) va *CarsDealer*(*name*, *address*, *closedTime*, *phone*, *operators*[], *ArrayList*<*Car*> *cars*) sinflarni yarating va ular orasidagi bog'lanishni hosil qiling.



- Car sinfini rasmda berilgan atributlar asosida yarating
- Car sinfining konstruktor va metodlarini to'g'ri yarating
- CarsDealer sinfini rasmda berilgan atributlari asosida yarating
- CarsDealer sinfining konstruktor va metodlarini to'g'ri yarating
- Car va CarsDealer sinflari o'rtasida "aggregation" bog'lanish o'rnatish
- showOperators() metodi orqali avtosalonidagi operatorlar ro'yhatini chiqaring, agar operatorlar bo'lmasa "ushbu avtosalonida operatorlar mavjud emas" degan xabar chiqarilsin, getNumberOfOperators() va getNumberOfCars() metodi orqali mos ravishda avtosalonidagi operatorlar va moshinalar sonini qaytaring.

Izoh: Ikkinchi savol (amaliy topshiriq) uchun eng yuqori ball: 20

Topshiriq-2 bo'yicha baholash mezonlari

Topshiriq	Mezon	Ball
2-Amaliy topshiriq	a-punkt	2
	b-punkt	3
	c-punkt	2
	d-punkt	3
	e-punkt	3
	f-punkt	7
	JAMI	20

Topshiriq-3. Sinflarda vorislik, polymorphism va abstraktlik. Amaliy topshiriq uchun namunaviy savollar

1. Berilgan sinflar o'rtasida (*PNGImage*, *Image*) vorislik asosida bog'lanish o'rnatish. Interfeys yoki abstrakt sinfdagi (*ImageView*) metodlarni (virtual funksiyalarni) "override" qilish orqali dastur tuzing va natija oling

Voris sinf	Super sinf	Interfeys
PNGImage Atributlari: -data: int[][] -contrast: double PNGImage()	Image Atributlari -name: String -height: int -width: int Image()	Imageview Abstrakt metodlar: -show(): void -open(): void -getSize(): String

2. Berilgan sinflar o'rtasida (*JPEGImage*, *Image*) vorislik asosida bog'lanish o'rnatish. Interfeys yoki abstrakt sinfdagi (*ImageView*) metodlarni (virtual funksiyalarni) "override" qilish orqali dastur tuzing va natija oling

Voris sinf	Super sinf	Interfeys
JPEGImage Atributlari: -data: int[][] -verticalResolution: double -horizontalResolution: double JPEGImage()	Image Atributlari -name: String -height: int -width: int Image()	Imageview Abstrakt metodlar: -show(): void -open(): void -getSize(): String

3. Berilgan sinflar o'rtasida (*Circle*, *Shape*) vorislik asosida bog'lanish o'rnatish. Interfeys yoki abstrakt sinfdagi (*Drawable*) metodlarni (virtual funksiyalarni) "override" qilish orqali dastur tuzing va natija oling

Voris sinf	Super sinf	Interfeys
Circle Atributlari: -radius: double Circle() setter(): void getter(): Type	Shape Atributlari -color: String -typeShape: String Shape()	Drawable Abstrakt metodlar: -draw(): void -area(): double -perimeter(): double

4. Berilgan sinflar o'rtasida (*Rectangle*, *Shape*) vorislik asosida bog'lanish o'rnatish. Interfeys yoki abstrakt sinfdagi (*Drawable*) metodlarni (virtual funksiyalarni) "override" qilish orqali dastur tuzing va natija oling

Voris sinf	Super sinf	Interfeys
Rectangle Atributlari: -sideA: double -sideB: double Rectangle() setter(): void getter(): Type	Shape Atributlari -color: String -typeShape: String Shape()	Drawable Abstrakt metodlar: -draw(): void -area(): double -perimeter(): double

5. Berilgan sinflar o'rtasida (*Triangle*, *Shape*) vorislik asosida bog'lanish o'rnatish. Interfeys yoki abstrakt sinfdagi (*Drawable*) metodlarni (virtual funksiyalarni) "override" qilish orqali dastur tuzing va natija oling

Voris sinf	Super sinf	Interfeys
Triangle Atributlari: -sideA: double -sideB: double -sideC: double Rectangle() setter(): void getter(): Type	Shape Atributlari -color: String -typeShape: String Shape()	Drawable Abstrakt metodlar: -draw(): void -area(): double -perimeter(): double

6. Berilgan sinflar o'rtasida (*Car*, *Transport*) vorislik asosida bog'lanish o'rnatish. Interfeys yoki abstrakt sinfdagi (*Vehicle*) metodlarni (virtual funksiyalarni) "override" qilish orqali dastur tuzing va natija oling

Voris sinf	Super sinf	Interfeys
Car Atributlari: -model: String -price: double -consumption: double Car() setter(): void getter(): Type	Transport Atributlari -color: String -company: String -fuelType: int Transport()	Vehicle Abstrakt metodlar: -start(): void -stop(): void -checkSpeed(): int

7. Berilgan sinflar o'rtasida (*Bus*, *Transport*) vorislik asosida bog'lanish o'rnatish. Interfeys yoki abstrakt sinfdagi (*Vehicle*) metodlarni (virtual funksiyalarni) "override" qilish orqali dastur tuzing va natija oling

Voris sinf	Super sinf	Interfeys
Bus Atributlari: -model: String -passangers: int -consumption: double Bus() setter(): void getter(): Type	Transport Atributlari -color: String -company: String -fuelType: int Transport()	Vehicle Abstrakt metodlar: -start(): void -stop(): void -checkSpeed(): int

8. Berilgan sinflar o'rtasida (*Airplane*, *Transport*) vorislik asosida bog'lanish o'rnatish. Interfeys yoki abstrakt sinfdagi (*Vehicle*) metodlarni (virtual funksiyalarni) "override" qilish orqali dastur tuzing va natija oling

Voris sinf	Super sinf	Interfeys
Airplane Atributlari: -model: String -passengers: int -type: String Airplane() setter(): void getter(): Type	Transport Atributlari -color: String -company: String -fuelType: int Transport()	Vehicle Abstrakt metodlar: -start(): void -stop(): void -takeoff(): void -checkSpeed(): int

Izoh: Uchinchi savol (amaliy topshiriq) uchun eng yuqori ball: 20

Topshiriq-3 bo'yicha baholash mezonlari

Topshiriq	Mezon	Ball
3-Amaliy topshiriq	Super sinf yaratish	2
	Voris sinf yaratish	3
	Interfeys yoki abstrakt sinf yaratish	3
	Voris va super sinf konstruktorlarini yaratish	3
	Abstrakt metodlarni "override" qilish	5
	Natijalarni chop qilish	4
	JAMI	20