

Code for classes in python:

```
from datetime import datetime
```

```
class Address:
```

```
    def __init__(self, city, postal_code, state, street):
        self.city = city
        self.postal_code = postal_code
        self.state = state
        self.street = street
```

```
class Person:
```

```
    def __init__(self, name, cnic, address, gender, age):
        self.name = name
        self.cnic = cnic
        self.address = address
        self.gender = gender
        self.age = age
```

```
class Patient(Person):
```

```
    def __init__(self, patientId, phoneNumber, email, name, cnic, address, gender, age):
        super().__init__(name, cnic, address, gender, age)
        self.patientId = patientId
        self.phoneNumber = phoneNumber
        self.email = email
```

```
class Services:
```

```
    def __init__(self, serviceId, serviceName, serviceCost):
        self.serviceId = serviceId
        self.serviceName = serviceName
        self.serviceCost = serviceCost
```

```
class Employee(Person):
```

```
    def __init__(self, employeeId, dateOfJoin, dateOfLeave, salary, designation, name, cnic, address, gender, age):
        super().__init__(name, cnic, address, gender, age)
        self.employeeId = employeeId
        self.dateOfJoin = dateOfJoin
        self.dateOfLeave = dateOfLeave
```

```
self.salary = salary
self.designation = designation
```

```
class Appointment:
```

```
def __init__(self, appointmentId, date, time, patient, dentist, branch, service):
    self.appointmentId = appointmentId
    self.date = date
    self.time = time
    self.patient = patient
    self.dentist = dentist
    self.branch = branch
    self.service = service
```

```
class Branch:
```

```
def __init__(self, branchId, address, phoneNumber, manager, receptionist, hygienist, dentist, services,
patients, appointments):
```

```
    self.branchId = branchId
    self.address = address
    self.phoneNumber = phoneNumber
    self.manager = manager
    self.receptionist = receptionist
    self.hygienist = hygienist
    self.dentist = dentist
    self.services = services
    self.patients = patients
    self.appointments = appointments
```

```
def addService(self, service):
    self.services.append(service)
```

```
def addAppointment(self, appointment):
    self.appointments.append(appointment)
```

```
def addPatient(self, patient):
    self.patients.append(patient)
```

```
def addStaff(self, staff):
    if staff.designation == "Manager":
        self.manager = staff
```

```
elif staff.designation == "Receptionist":
    self.receptionist = staff
elif staff.designation == "Hygienist":
    self.hygienist = staff
elif staff.designation == "Dentist":
    self.dentist = staff

def checkout(self, appointment):
    total_cost = appointment.service.serviceCost
    vat = 0.05 * total_cost
    final_bill = total_cost + vat
    return f"Patient {appointment.patient.name} is charged {final_bill}$ for
{appointment.service.serviceName} service with a VAT of {vat}$."
```