

Assignment 1 (50%)

Create a new Java project named "Restaurant", create package named "food". Create the Classes, attributes, and methods as described in the following diagram. Both MainDish and Dessert classes must extend the abstract class MenuItem:

```
<abstract class> MenuItem
+name <string>
+category <string>
+price <double>
+calories <int>
+printDetails() <abstract>
+getPrice() <abstract>
```

```
<class> MainDish extends MenuItem
+cookTime <int>
+isVegetarian <boolean>
```

```
<class> Dessert extends MenuItem
+sugarContent <int>
+hasNuts <boolean>
```

Each class should have two constructors, one with and one without parameters. The method printDetails() should print all attributes for each class.

In the main class Demo, create two lists, one for MainDish and one for Dessert items. Create a menu with these operations:

1. Add Main Dish
2. Add Dessert
3. Display all menu items
4. Find item with longest cook time
5. Find most expensive item
6. Calculate average price
7. Exit

Assignment 2 (50%)

Create a new Java project named "Hospital", create package named "management". Create the Class and attributes as described:

```
<class> Patient
+patientNumber <string>
+firstName <string>
+lastName <string>
+roomNumber <int>
```

Create getters and setters for all attributes.

The main class HospitalDemo should include the following Methods:

- Patient registerPatient(String firstName, String lastName), returns new Patient object with generated patientNumber
- void displayPatient(Patient patient), prints all Patient attributes

Main method requirements:

1. Create ArrayList of 10 patient names (format: "FirstName LastName")
2. Using streams, create Patient objects for each name:
 - Generate patientNumber format: "P-XXXX" (random 4 digits)
 - Assign random roomNumber between 100-399
3. Print all patient details
4. Create a filtered list containing patients whose room numbers are between 200-299 AND whose room numbers are odd, then display the list