UNIVERSITÀ DEGLI STUDI DELL'AQUILA

Dipartimento di Ingegneria e Scienze dell'Informazione e Matematica

CORSO DI LAUREA MAGISTRALE IN INFORMATICA (ASE)

Insegnamento Model Driven Engineering

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Metamodel Description

The metamodel represents a structure for modeling a restaurant management system; therefore, it’s designed to capture details of a restaurant's structure, management, and menu organization, accommodating various components needed for operational and structural information.

1. **Relations:** Relations is a virtual package that logically groups all the concepts that models our language definition associations
2. **EmployeeRelation:** The EmployeeRelation models the association existing between a restaurant and its employees. Every restaurant must have at least one employee.
3. **IRestaurantRelation:** the IRestaurantRelation concept is an interface that models our language definition associations existing between a Restaurant concept and other different concepts
4. **OwnerRelation:** The OwnerRelation models the association existing between a restaurant and its owners. Every restaurant must have at least one owner.
5. **Types:** Types is a virtual package that logically groups all the concepts that models other concepts' attributes types
6. **CourseType:** CourseType is an Enumerator that models the type of a restaurant dish, like for example fried, vegan, pizza, etc
7. **Date:** Date is a CustomType that implements a constrained datatype used to model the Date type already existing in other programming languages
8. **FiscalCode:** FiscalCode is a CustomType that implements a constrained datatype used to model the FiscalCode type
9. **Float:** Float is a CustomType that implements a constrained datatype used to model the Float type already existing in other programming languages
10. **Gender:** Gender is an Enumerator that models the gender of a person
11. **Material:** Material is an Enumerator that models the materials a table can be made of, like for example glass, wood, plastic, etc
12. **Role:** Role is an Enumerator that models the type of job that an employee has inside a restaurant, like for example cashier, chef, waiter etc
13. **VatCode:** VatCode is a CustomType that implements a constrained datatype used to model the VAT type
14. **Bathroom:** the Bathroom concept models a restaurant's bathroom with their size, number of toilets and specified gender
15. **City:** the City concept models real-life cities belonging to a region
16. **Course:** the Course concept models a typical restaurant dish with its number of pieces, price, type of food and description
17. **Diagram:** the Diagram concept is the root element of our language, it comprehends all the elements of the languages like restaurants, dining rooms, owners, etc.
18. **DiningRoom:** the DiningRoom concept models a restaurant's dining room with their size and tables

19. **Employee:** the Employee concept extends from Person and models the employee that works in the restaurant. Employees have a name, a surname, a date and place of birth, contract start and end dates and, finally, the salary
20. **Kitchen:** the Kitchen concept models a restaurant's kitchen room with its sizes and number of stoves
21. **Menu:** the Menu concept models a restaurant menu made up by courses
22. **Owner:** the Owner concept extends from Person and models a restaurant owner that has a name, surname, data and place of birth and VAT
23. **Person:** the Person concept is an interface that models a real-life person with their name, surname and data and place of birth
24. **Region:** the Region concept models real-life regions in which cities belong to
25. **Restaurant:** the Restaurant concept models an actual restaurant located in a street belonging to a certain city
26. **RestaurantArea:** the RestaurantArea concept is an interface that models a generic restaurant room that could be a kitchen or a bathroom, for example, with its size and name
27. **Table:** the Table concept models a table of a DiningRoom with their specified material, number and number of chairs

Language Constraints

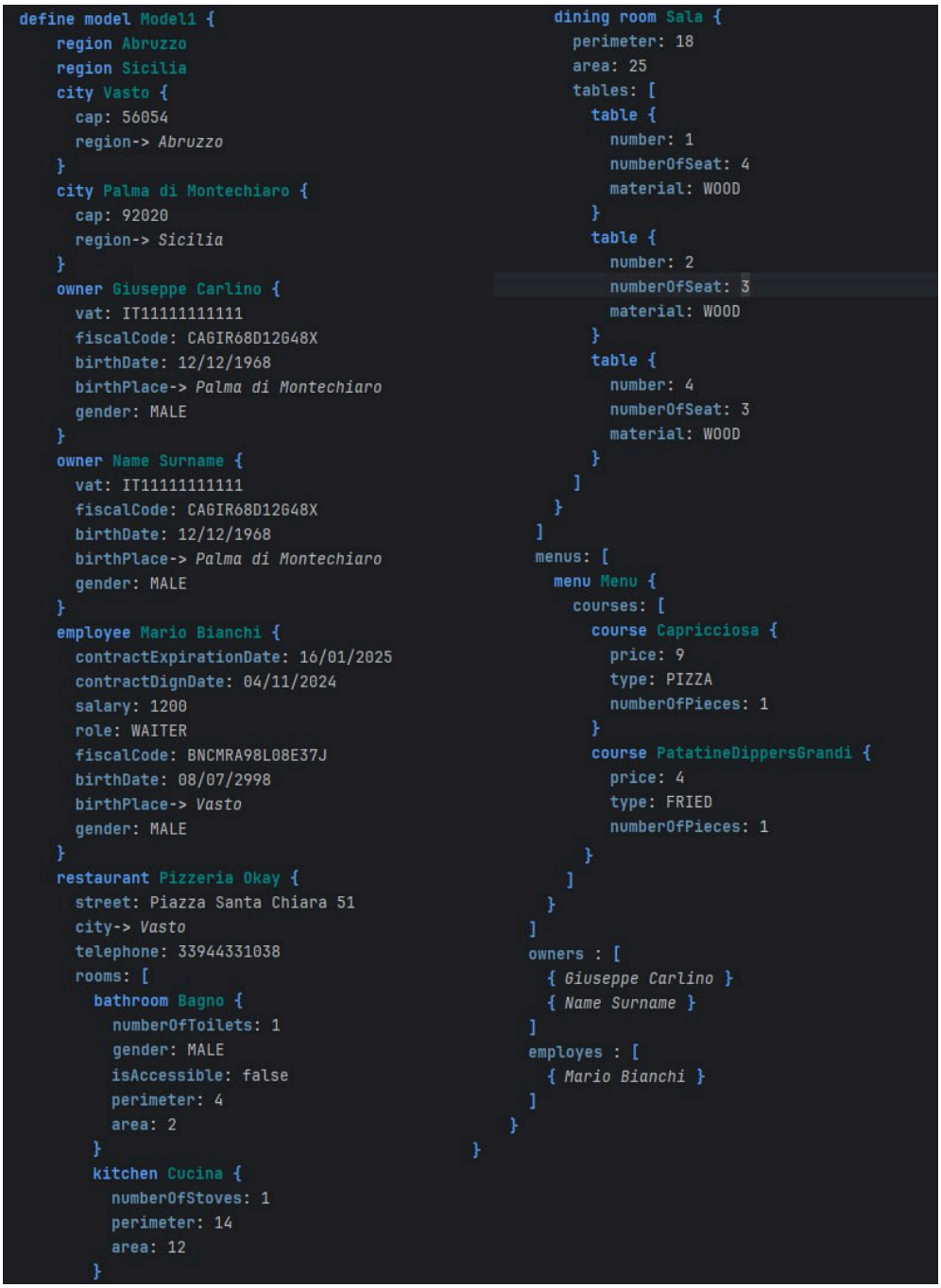
Our language definitions also has some constraints:

1. **City_Constraints:** A City concept can only be the child of a Diagram concept, nothing else
2. **Course_Constraints:** A Course concept can only be the child of a Menu concept, nothing else
3. **Employee_Constraints:** An Employee concept can only be the child of a Diagram concept, nothing else
4. **IRestaurantRelation_Constraints:** the concepts that are implementing IRestaurantRelation can only be children of a Restaurant concept, nothing else
5. **Owner_Constraints:** An Owner concept can only be the child of a Diagram concept, nothing else
6. **Region_Constraints:** A Region concept can only be the child of a Diagram concept, nothing else
7. **Restaurant_Constraints:** A Restaurant concept can only be the child of a Diagram concept, nothing else
8. **RestaurantArea_Constraints:** the concepts that are implementing RestaurantArea can only be children of a Restaurant concept, nothing else
9. **Table_Constraints:** A Table concept can only be the child of a DiningRoom concept, nothing else

Models

We have also generated two models based on our defined language

- Model 1



```
define model Model1 {
    region Abruzzo
    region Sicilia
    city Vasto {
      cap: 56054
      region-> Abruzzo
    }
    city Palma di Montechiaro {
      cap: 92020
      region-> Sicilia
    }
    owner Giuseppe Carlino {
      vat: IT11111111111
      fiscalCode: CAGIR68D12648X
      birthDate: 12/12/1968
      birthPlace-> Palma di Montechiaro
      gender: MALE
    }
    owner Name Surname {
      vat: IT11111111111
      fiscalCode: CAGIR68D12648X
      birthDate: 12/12/1968
      birthPlace-> Palma di Montechiaro
      gender: MALE
    }
    employee Mario Bianchi {
      contractExpirationDate: 16/01/2025
      contractDignDate: 04/11/2024
      salary: 1200
      role: WAITER
      fiscalCode: BNCMRA98L08E37J
      birthDate: 08/07/2998
      birthPlace-> Vasto
      gender: MALE
    }
    restaurant Pizzeria Okay {
      street: Piazza Santa Chiara 51
      city-> Vasto
      telephone: 33944331038
      rooms: [
        bathroom Bagno {
          numberOfToilets: 1
          gender: MALE
          isAccessible: false
          perimeter: 4
          area: 2
        }
        kitchen Cucina {
          numberOfStoves: 1
          perimeter: 14
          area: 12
        }
        dining room Sala {
          perimeter: 18
          area: 25
          tables: [
            table {
              number: 1
              numberOfSeat: 4
              material: WOOD
            }
            table {
              number: 2
              numberOfSeat: 3
              material: WOOD
            }
            table {
              number: 4
              numberOfSeat: 3
              material: WOOD
            }
          ]
        }
      ]
      menus: [
        menu Menu {
          courses: [
            course Capricciosa {
              price: 9
              type: PIZZA
              numberOfPieces: 1
            }
            course PatatineDippersGrandi {
              price: 4
              type: FRIED
              numberOfPieces: 1
            }
          ]
        }
      ]
      owners : [
        { Giuseppe Carlino }
        { Name Surname }
      ]
      employes : [
        { Mario Bianchi }
      ]
    }
}
```

- Model2

```
define model model2 {
    region Abruzzo
    region Kanto di Honshu
    city Vasto {
      cap: 66054
      region-> Abruzzo
    }
    city Tokyo {
      cap: JP-13
      region-> Kanto di Honshu
    }
    owner Senku Ishigami {
      vat: <no vat>
      fiscalCode: SHGSNK04L52012A
      birthDate: 04/01/2004
      birthPlace-> Tokyo
      gender: MALE
    }
    employee Taiju Oki {
      contractExpirationDate: <no contractExpirationDate>
      contractDignDate: 02/04/2024
      salary: 1500
      role: WAITER
      fiscalCode: <no fiscalCode>
      birthDate: 02/04/2003
      birthPlace-> Tokyo
      gender: MALE
    }
    employee Francois Foransowa {
      contractExpirationDate: 10/06/2027
      contractDignDate: 05/11/2024
      salary: 2200
      role: WAITER
      fiscalCode: <no fiscalCode>
      birthDate: 07/08/1997
      birthPlace-> Tokyo
      gender: MALE
    }
    restaurant Kuma Sushi {
      street: Piazza Gabriele Rossetti 35
      city-> Vasto
      telephone: 065880787
      rooms: [
    kitchen Guoba {
      numberOfStoves: 6
      perimeter: 15
      area: 2
    }
    bathroom Benjou {
      numberOfToilets: 2
      gender: MALE
      isAccessible: false
      perimeter: 45
      area: 12
    }
    bathroom Tearai {
      numberOfToilets: 2
      gender: FEMALE
      isAccessible: true
      perimeter: 6
      area: 5
    }
    dining room Panda {
      perimeter: 68
      area: 12
      tables: [
        table {
          number: 0
          numberOfSeat: 6
          material: WOOD
        }
        table {
          number: 1
          numberOfSeat: 7
          material: WOOD
        }
      ]
    }
    dining room Kuma {
      perimeter: 54
      area: 23
      tables: [
        table {
          number: 3
          numberOfSeat: 8
          material: WOOD
        }
        table {
          number: 2
          numberOfSeat: 10
          material: WOOD
        }
      ]
    }
  ]
    menus: [
      menu Pranzo {
        courses: [
          course Sake nigiri {
            price: 3
            type: NIGIRI
            numberOfPieces: 3
          }
          course Riso alla cantonese {
            price: 7
            type: MAIN_DISH
            numberOfPieces: 1
          }
        ]
      }
      menu Cena {
        courses: [
          course Sake nigiri {
            price: 3
            type: NIGIRI
            numberOfPieces: 3
          }
          course Riso alla cantonese {
            price: 7
            type: MAIN_DISH
            numberOfPieces: 1
          }
          course Gio stella {
            price: 5
            type: APPETIZER
            numberOfPieces: 2
          }
          course La Piovra {
            price: 19
            type: PIZZA
            numberOfPieces: 1
          }
        ]
      }
    ]
    owners : [
      { Senku Ishigami }
    ]
    employes : [
      { Taiju Oki }
      { Francois Foransowa }
    ]
  }
}
```