

Waiter System

THREE-Tier Application

Objectives

The main objectives of this **pilot system** are to enhance your understanding of 3 tier applications and OO principles and to enable you to

- Work with multiple forms.
- Implement good OO programming principles
- Use inheritance and composition.
- Use collections and control arrays
- Maintain all the waiters in the system
- Use dynamic events
- Effectively schedule waiters for their shifts.
- Test the system extensively using both black box and white box testing approaches.

System Specifications (Not all of this will be implemented in the workshops)

Your development team has been involved in the development for the Poppel system over the past 6 months. The GoodFood restaurant chain, one of Poppel's main customers, came to know about your development team's expertise, and approached you to develop a much needed waiter system. The Waiter System (WaS) will initially be used as an example to implement, investigate and understand OO and database concepts over a series of C#.NET lab sessions and help would be developers to gain confidence. At a later stage the WaS system will then be implemented at the different restaurants of the GoodFood chain to ensure the efficient scheduling of their waiters. An extension of this system will incorporate the customer bookings at a later stage. The restaurants in the GoodFood chain employ different kinds of waiters, fulfilling different roles in the restaurants. This system that will be developed as a pilot for one specific restaurant, will focus mostly on the waiter role. In general three types of waiters exist: head waiters, waiters and runners. For this restaurant there will only be three head waiters and each head waiter only works one 8 hour shift per day and a maximum of 5 shifts per week, except for those cases when one of the headwaiters

is on holiday. Only one headwaiter will be on duty during a shift, but there will be two 8 hour shifts every day, from 8 to 16:00 and from 16:00 until midnight. Waiters and runners are often students working at the restaurant to earn pocket money and thus prefer to work often but for shorter durations. They will work 4 hour shifts. Each shift will have 3 waiters and 2 runners. Head waiters are normally permanent staff and will receive a monthly salary. Waiters will receive a basic rate per shift as well as the 80% of the tips they earned during their shift. Each runner will receive 10% of the waiters' total tips as they need to provide efficient service throughout their shift. The restaurant employs 8 waiters and 20 runners and the waiters and runners are supposed to work at least 5 shifts per week, unless they are on holiday. They are allowed to work 2 shifts per day.

Implementation

The Pilot System WaS will be developed over 4 phases. For the **first phase** your system should also be able to add an employee (waiter, runner or headwaiter) to the database. For the system to work effectively, to be scalable and maintainable, you therefore will have to set up a logical structure for the classes in this system. Each employee is firstly a person. In this system each employee will have a role. This role can either be that of head waiter, waiter or runner.

Phase two of this system will add a multi-document interface (MDI) to the solution, to allow for better navigation from one form to the next. This phase will also include the functionality of listing of all the waiters, head waiters and runners. Your system should also be able to list the employees by role.

A main business value of this system is to allow the restaurant to create and manage the shifts the shifts for the waitrons. This will be left for **the third phase** of this project, which can later be expanded to include the shift for the runners as well.