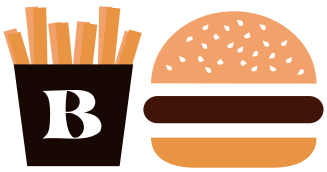
2023

COS 214

Practical 5



Burgundy

Team Members:

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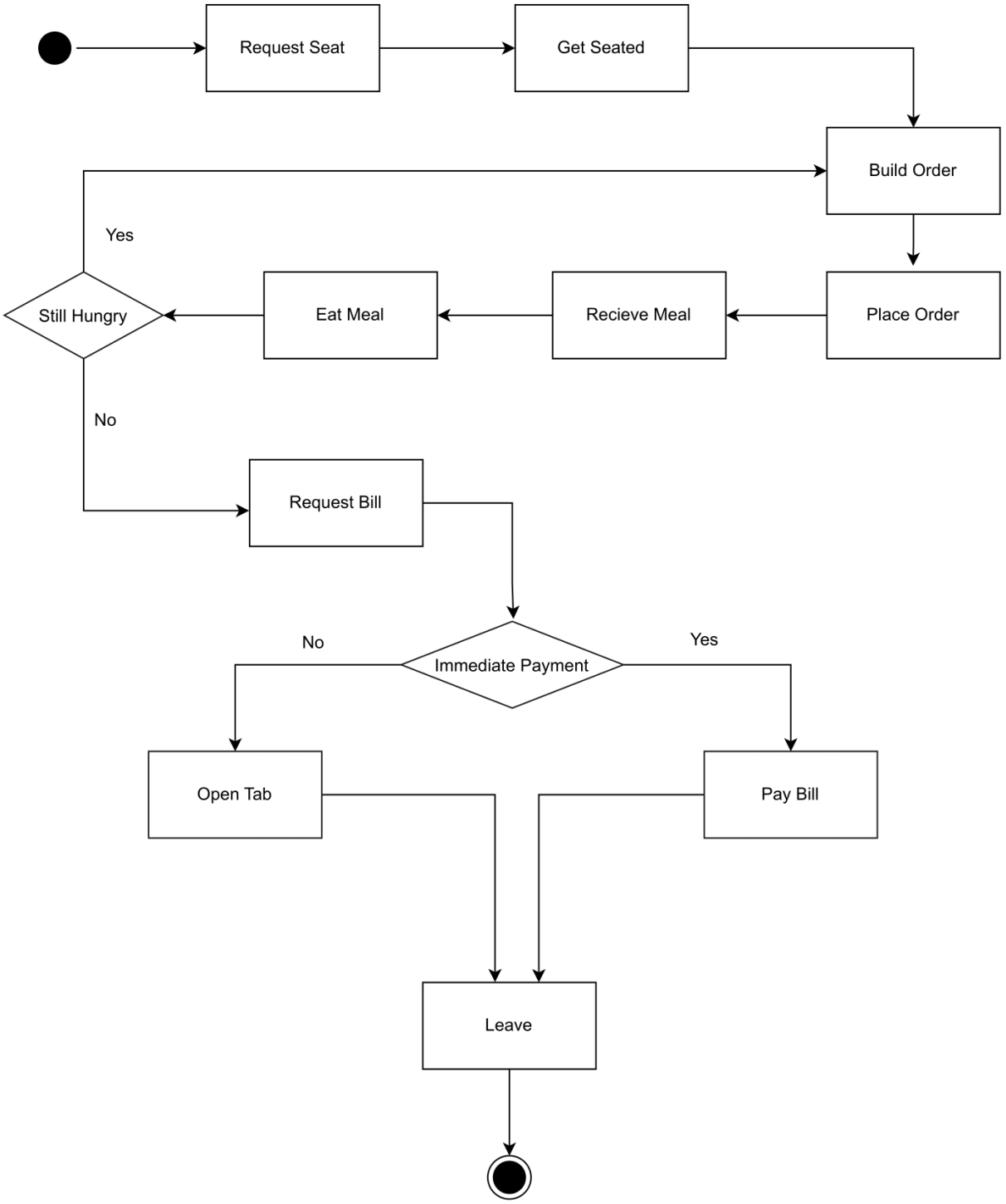
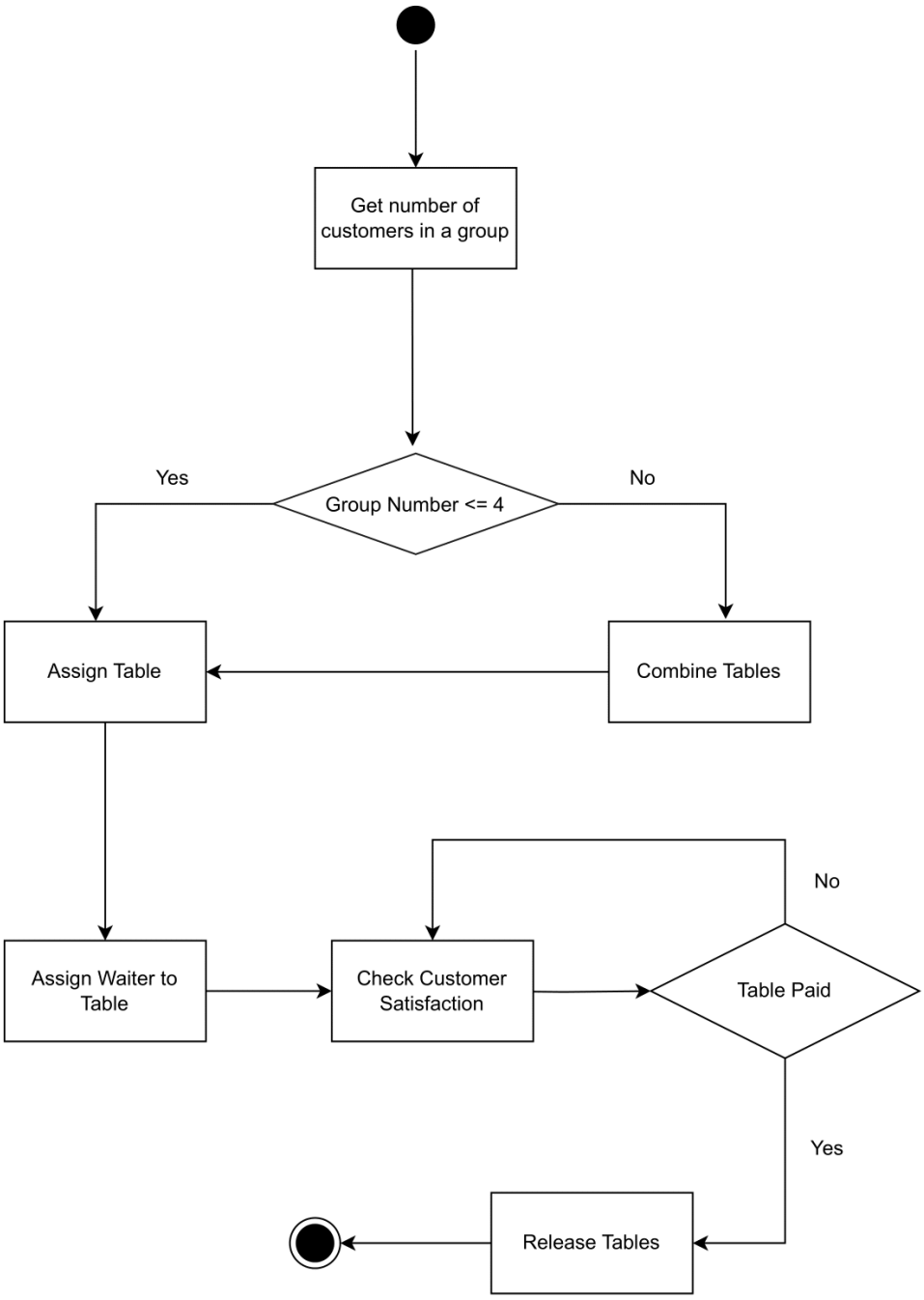
Katlego Zondo
Sechaba Ntshehi

Customer Activity Diagram

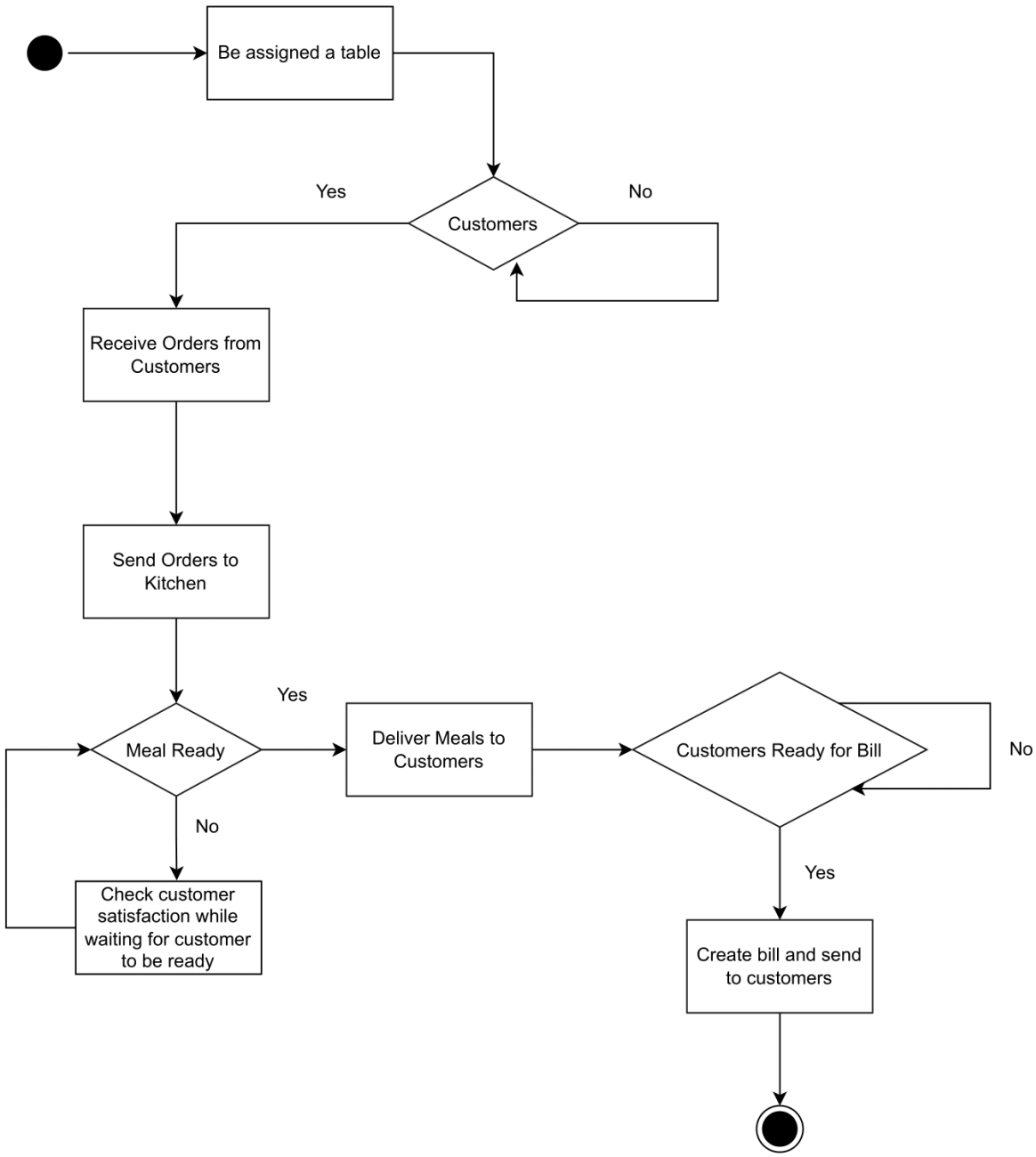


Note: Pay Bill is composite and paying immediately can be done by either one customer or by all customers at that table

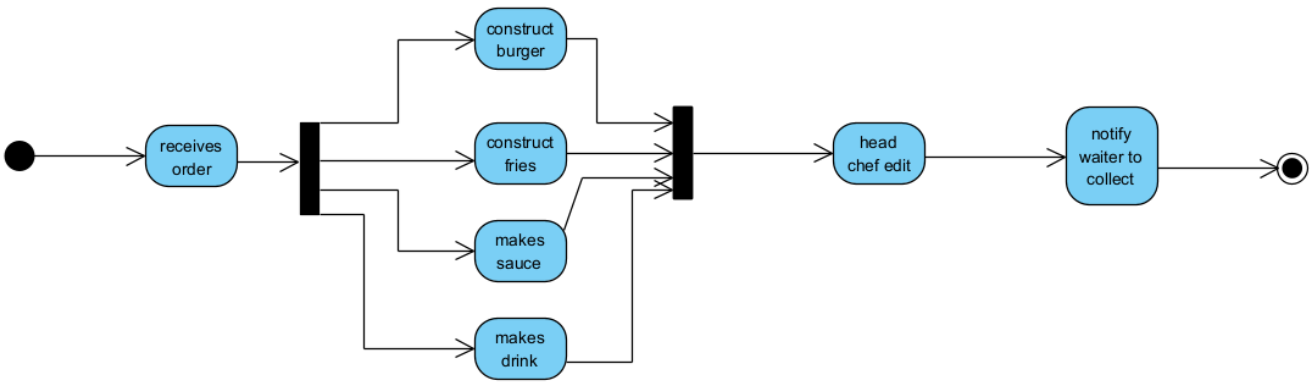
Manager Activtiy Diagram



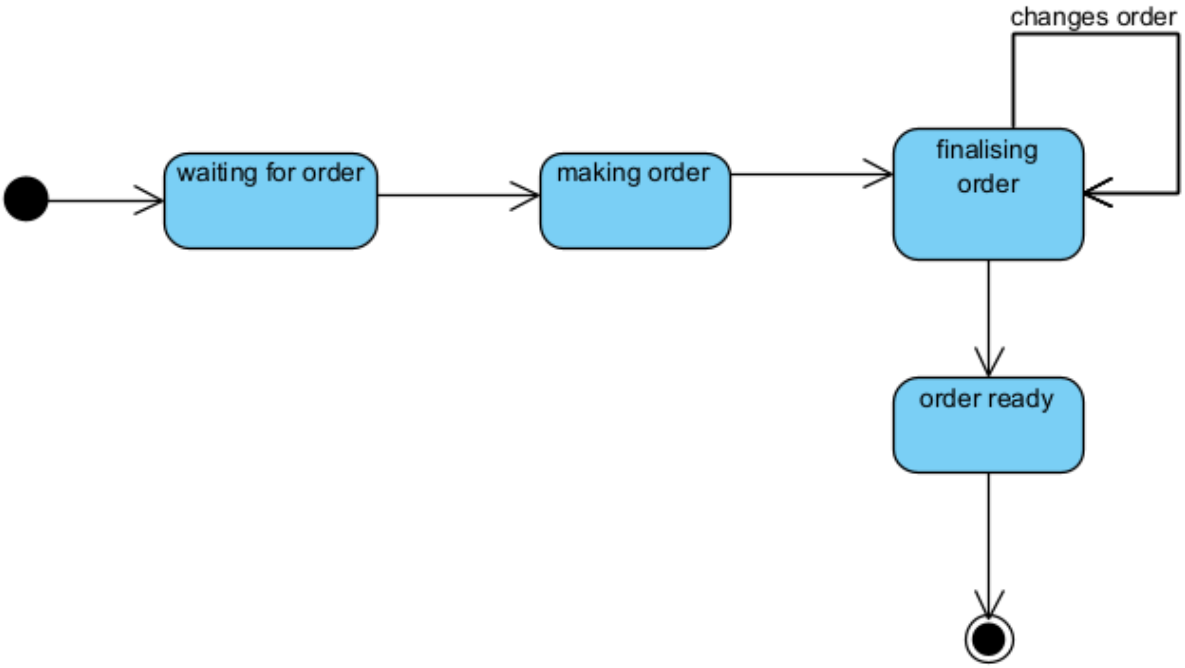
Waiter Activity Diagram



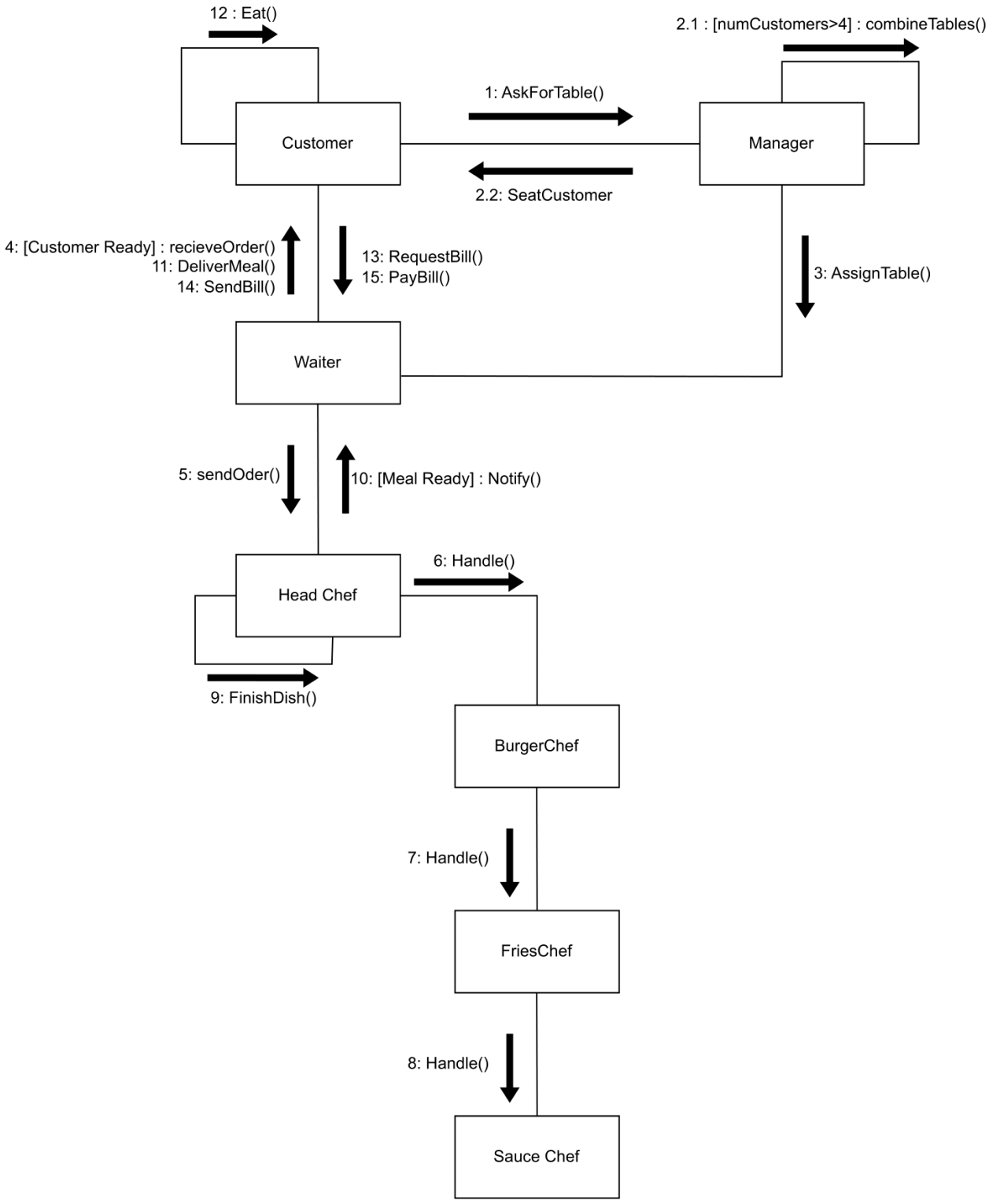
Chef Activity Diagram



Chef State Diagram



Kitchen-Floor Communication Diagram



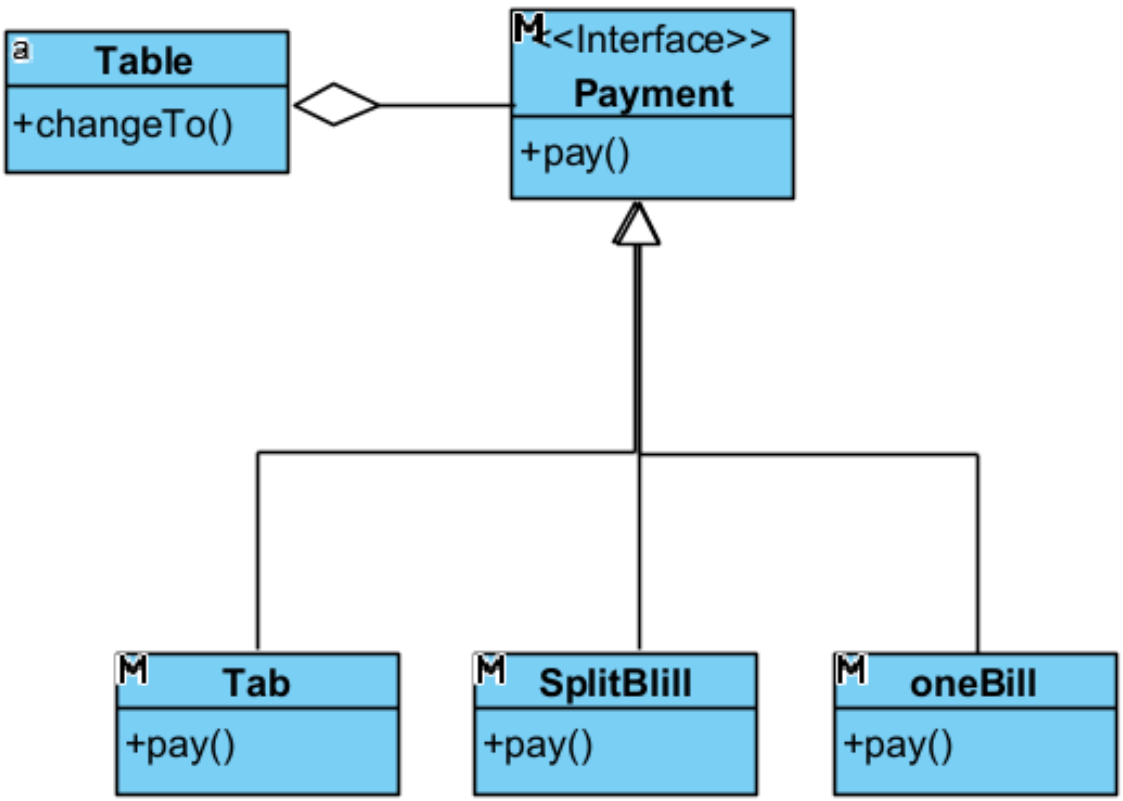
Waiter-Table Object Diagram

Waiter-Table Object (Waiter has been assigned a table, table is not yet occupied)

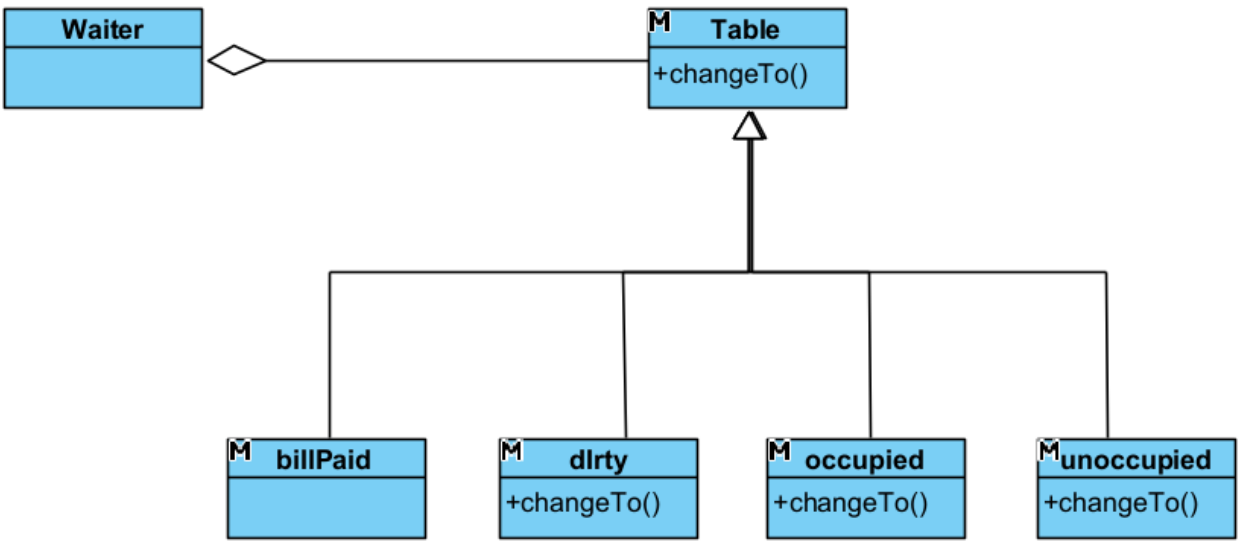
Waiter-Table Object (Waiter has created bill, table now has to pay)

Waiter-Table Object (Waiter bill has been paid, table now has now paid bill)

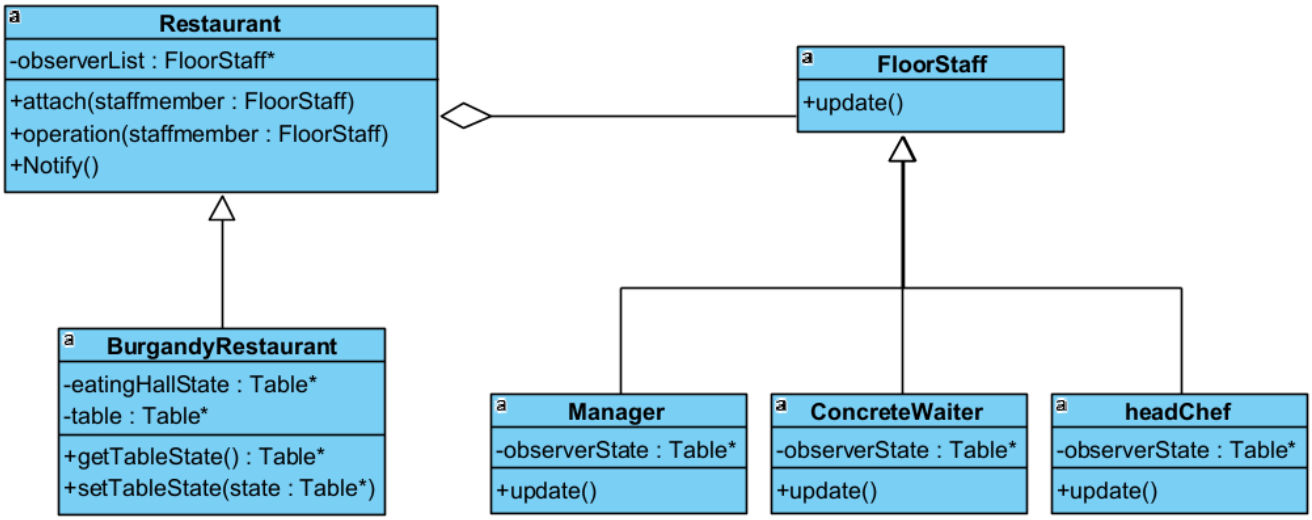
Strategy Pattern



State Pattern



Observer Pattern



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COS 214 Final Project - Coding Standards

Naming Conventions

- **Function/ Variable Names:** Use camel case for naming. Start with a lowercase letter and capitalise the first letter of each subsequent word. Example:

```
int myVariableName;
```

Code Formatting

- **Spacing:** Use spaces on both sides of operators to improve code readability. Example:

```
z = x + y;
```

- **Variable Declaration:** Whenever possible, define variables at the beginning of the function. After declaring the variables, leave a line open before continuing with the rest of the function. This will improve code organisation and readability.

- **Pointer Declaration:** When using pointers, there must be no space between the datatype and the dereference operator. Example: `int* variableName`.

```
int* variableName;
```

- **Compound Statements:** Follow the Kernighan and Ritchie (K&R) style for compound statements. Place the opening brace on the same line as the function declaration or control statements. Use a consistent "Tab" indentation for the content within the braces. Example:

```
void functionName() {
    if (condition) {
        //Do something
    }
    else {
        // Do something else
    }
    return;
}
```

- **Functions**
  - Functions are designed to perform a specific task efficiently and effectively.
  - In order to promote modularity, functions are generally recommended to be limited to a length of 20-40 lines.
  - Constructor functions, unlike other functions, are exempt from the maximum of three parameters rule.
  - It is considered good11 practice for functions, even those with no return value (void functions), to always conclude with a return statement.
  - It is important for function names to accurately describe the purpose or action performed by the function.
  - Within their scope, functions are typically expected to have only one return statement.
  - Function names should be reasonably concise and descriptive.
  - It is advisable to validate pointers for null values to prevent potential issues.
  - Destructors, which handle the cleanup of resources, should be carefully managed to ensure proper execution.

- **Classes**
  - Classes must be defined using in a .h file and implementation must be in the .cpp
  - All classes must have their own header files
  - Copy constructor and assignment overloading will be implemented on a case by case basis.

Documentation

- **Doxygen Comments:**
  - For documentation, use Doxygen comments to describe the code.
  - Generally, high-level comments go in the header file of a class. Inline comments should still go inside the function definition inside the source file.
  - All comments that describe functions should contain a brief description, a longer and more detailed description and parameters and return values if applicable.

Error handling

- Throw exception when function expects an assigned pointer (NullpointerException)
- Input validation will be handled with exceptions (RuntimeException)
- Handling of exceptions will handled on a case by case basis

Testing

- Before merging a feature to the development branch, features should be fully tested, and functional
- Good testing standards must be followed, such as the ones detailed here: https://www.w3schools.in/software-testing/standards
- Trivial functions are exempt from testing
- Cover different use cases and user scenarios to ensure that your code handles various situations correctly.
- Using google test http://google.github.io/googletest/

Version Control using Git

- **Branching Strategy**
  - **Gitflow Workflow:** We will follow the Gitflow workflow for branch management. This workflow defines two main branches. The `master` and `develop` branches, along with other supporting branches for features, releases and hotfixes.
  - **Main Branches:**
    - **`master`:** Represents "production-ready" code. Code on this branch should be stable and executable.
    - **`develop`:** Integration branch where new features are merged and tested. This branch should also remain relatively stable.

- **Feature Branches**
  - **Feature Branches:** When adding new features, create feature branches from the **`develop`** branch. Give the feature branches descriptive names
  - **Pull Requests:** Submit a pull request to merge feature branches into the **`develop`** branch. The code in a feature branch should be reviewed and tested before merging.

- **Release Branches**
  - **Release Branches:** Release branches are used for final testing and any last-minute bug fixes. Release branches should also get descriptive names.
  - **Pull Requests:** Submit pull requests for changes in the release branches. Ensure proper testing and reviewing before merging to both **`develop`** and **`master`** branches.

- **Hotfix Branches**
  - **Hotfix Branches:** Used to fix critical issues or bugs in the production code. Should also use descriptive names.
  - **Pull Requests:** Submit pull requests for changes in the hotfix branches. Ensure proper testing and reviewing before merging to both **`develop`** and **`master`** branches.