# Assessment information booklet

## Competencies for this subject

This subject covers the following competencies:

- ICTPRG406 Apply introductory object-oriented skills
- ICTPRG413 Use a library or pre-existing components
- ICTWEB515 Implement and use web services

## Assessments

There are three assessment tasks in this subject:

| Assessment task | Required evidence |
|---|---|
| Assessment Task 1: Apply introductory object-oriented language skills* | Submit the following document(s):<br>• A client liaison feedback report<br>• A time and cost breakdown of the web application project<br>• A fully tested, fully functional web application<br>• Test documentations e.g., test cases, test scripts etc. |
| Assessment Task 2 (Part A)<br>Use a library of pre-existing components* | Submit the following document(s):<br>• A PowerPoint presentation slides containing all the information listed above |
| Assessment Task 2 (Part B): Use a library of pre-existing components | Submit the following document(s):<br>• A fully tested, fully functional web application utilising a class library function |
| Assessment Task 3 (Part A): Implement and use web services | Submit the following document(s):<br>• A fully tested, fully functional web application with a web service function |

| | |
|---|---|
| Assessment Task 3 (Part B): Implement and use web services | Submit the following document(s):<br>• Exam questions answered |

# Submitting assessments

Assessments are submitted in one of three ways. Look for the instructions with each assessment.

- Most assessments can be completed on your computer and the file uploaded to myIvy. Make sure you name the files according to instructions in each assessment before uploading.
- Some interactive assessments are completed on screen through myIvy. In most cases you will see your mark immediately after completing the assessment.
- Some assessments require you to either make a presentation or undertake a role play. These can be done either in class or online. If you are studying online you will be given instructions by your facilitator on how to participate.

Your assessment answers should conform to the Ivy College Style Guide, a copy of which is available on the myIvy site in the *Learning and Study Support* section.When submitting any assessment, make sure your name and subject code are on each page so that it is identifiable as your work.

## A note about referencing

The preferred style for referencing publications in your assessments is the APA Style. It is expected that you include a reference list of any books, websites, images, YouTube clips, journal articles and other information sources that you use. Also, include in text referencing for when you quote or paraphrase from these resources. There are many books and websites that provide information about this referencing system.

It is recommended to use the Ivy College Library on myIvy where the Study Skills Section has referencing guides available which provide clear and comprehensive information that should help.

# Assessment Task Case Study

### Scenario or background information

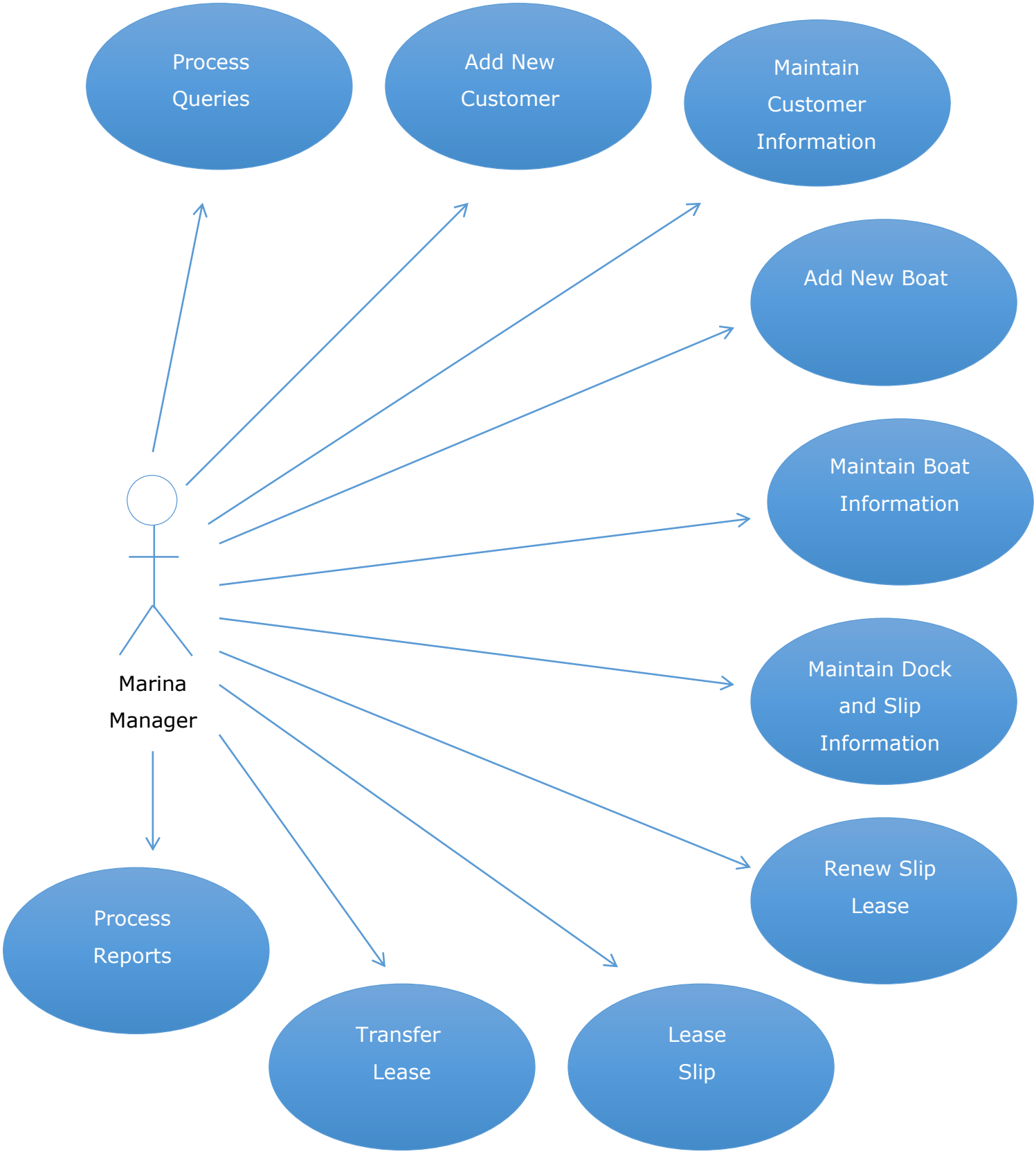
Popeye Marina is a privately owned corporation that rents boat slips and provides boat services on Olive Oyl Lakes, a large inland lake located in the Brutus area. Popeye is the largest of the three marinas on the lake. The other two are Olive Oyl Marina and Brutus Shed. The three marinas accommodate approximately 600 boats in slips: 450 sailboats and 150 powerboats. Popeye's boat population is around 350 sailboats and 75 powerboats, although it plans to expand these capacities.

Popeye Marina would like to have an automated system to track their customers, the slips they lease, and the boats in the slips. Initially, the system will simply maintain basic information for customers, slips and boats, and perform day-to-day business tasks. These tasks include creating a lease, computing the lease amount for a slip, and assigning a boat to a slip. The marina wants to use the system to search for information, such as vacant slips and slips leased to a specific customer.

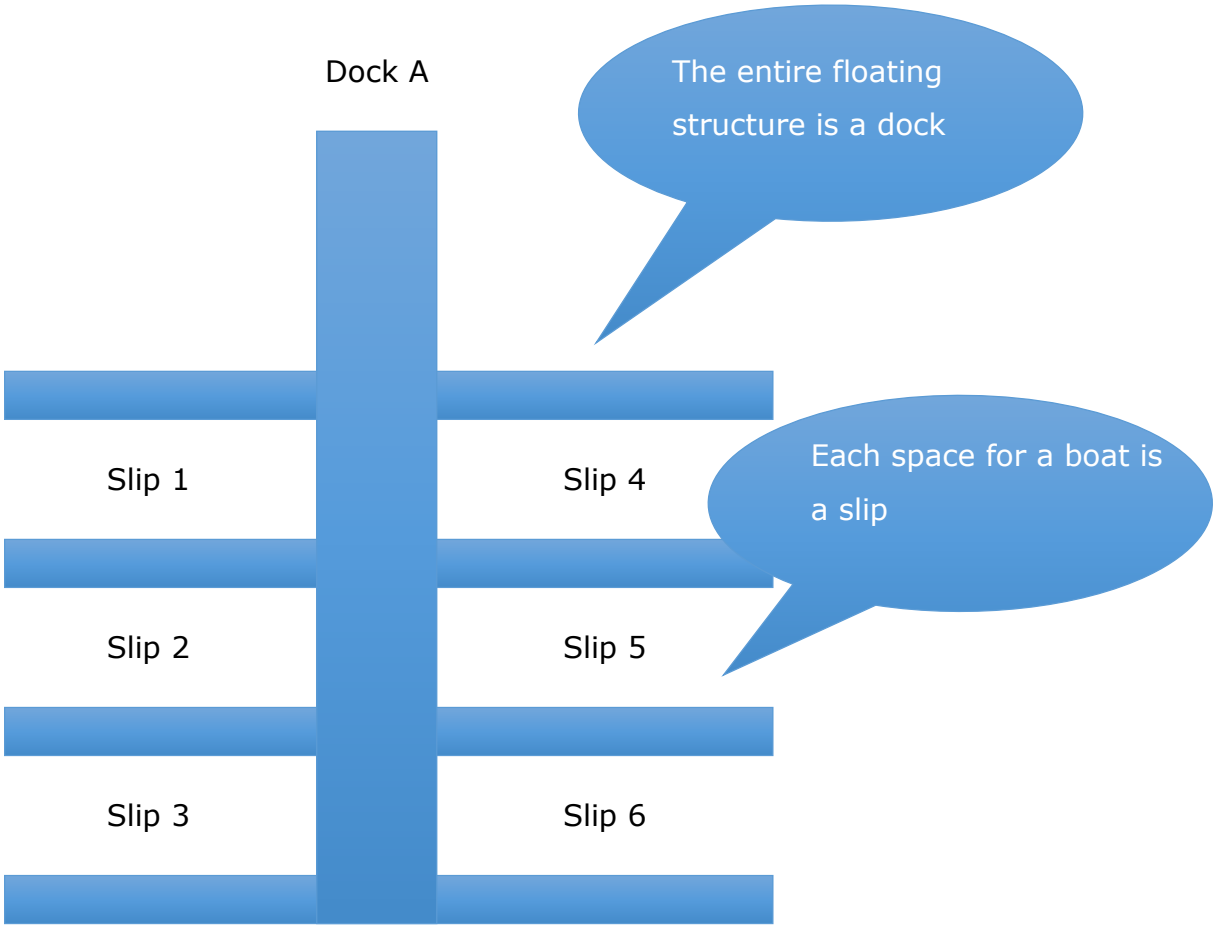
Popeye eventually wants to enhance the system so they can add boat service records, which will help them track tasks such as hauling a boat, painting the bottom of a boat, or working on the engine of a boat. Later, they want to add billing features to the system. They want to be able to use the system to generate bills for both slip leases and boat services, record payments, send late notices, and produce accounts receivable and other accounting reports. For now, it will help to include information on customers, slips and boats.

Six months ago, Popeye contracted the development of their proposed system to a web design firm but they went bankrupt. The only phase completed was the design phase and fortunately, Popeye managed to obtain copies of the preliminary design documents (i.e. class diagrams, use cases etc.) before they went bankrupt. They have now contracted your firm to continue the development phase of the project.

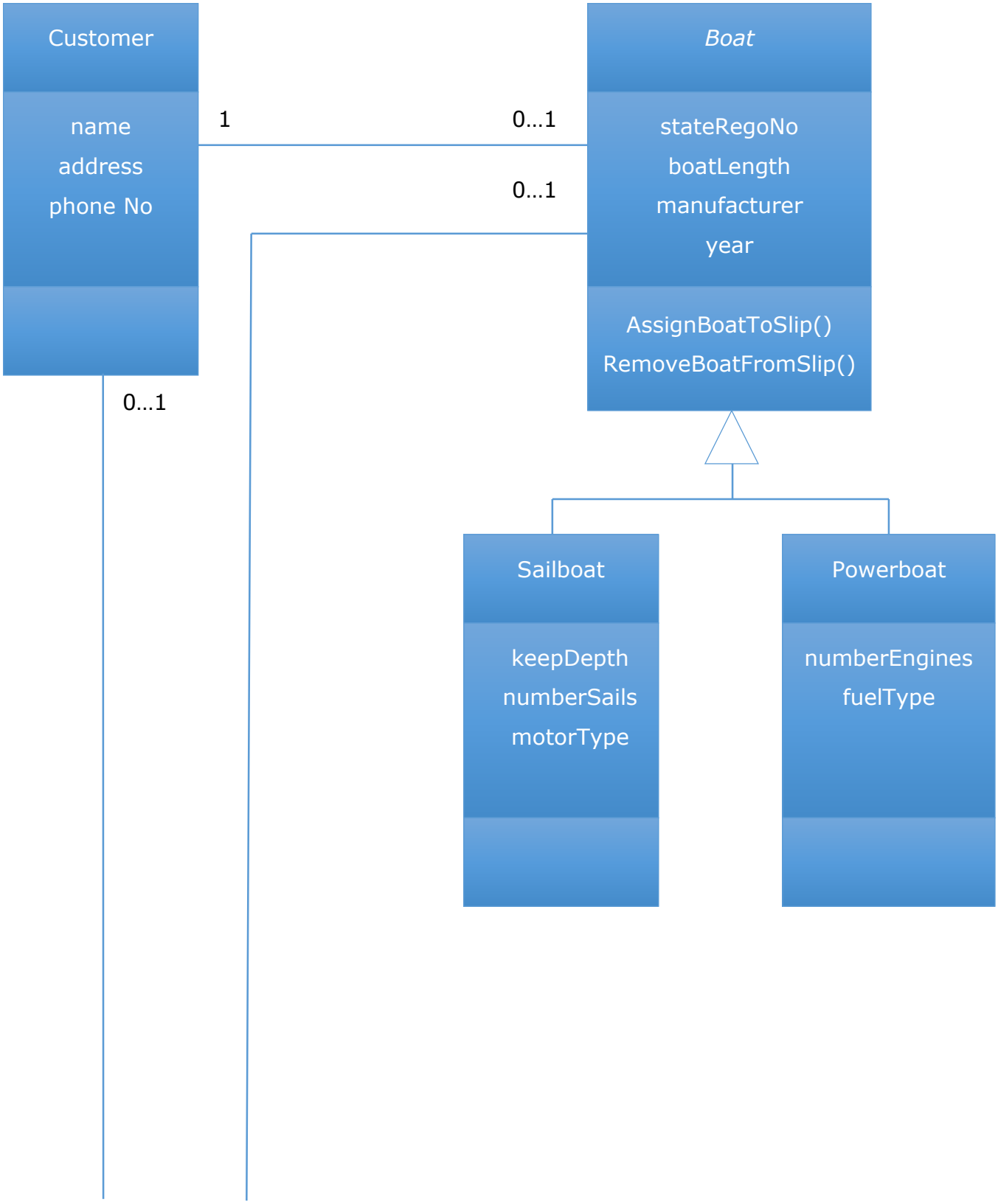
**Popeye Marina Project Use Case Diagram**

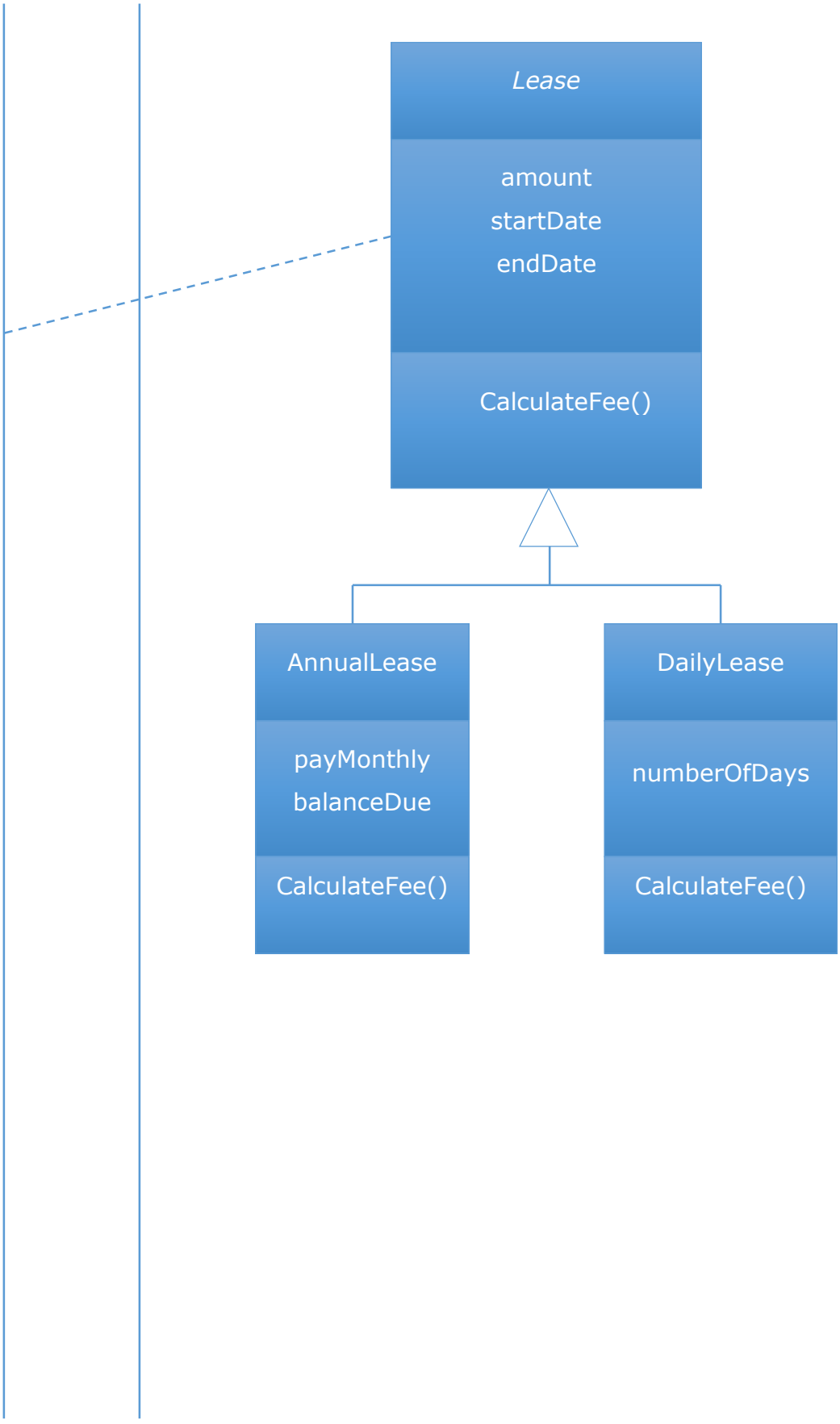


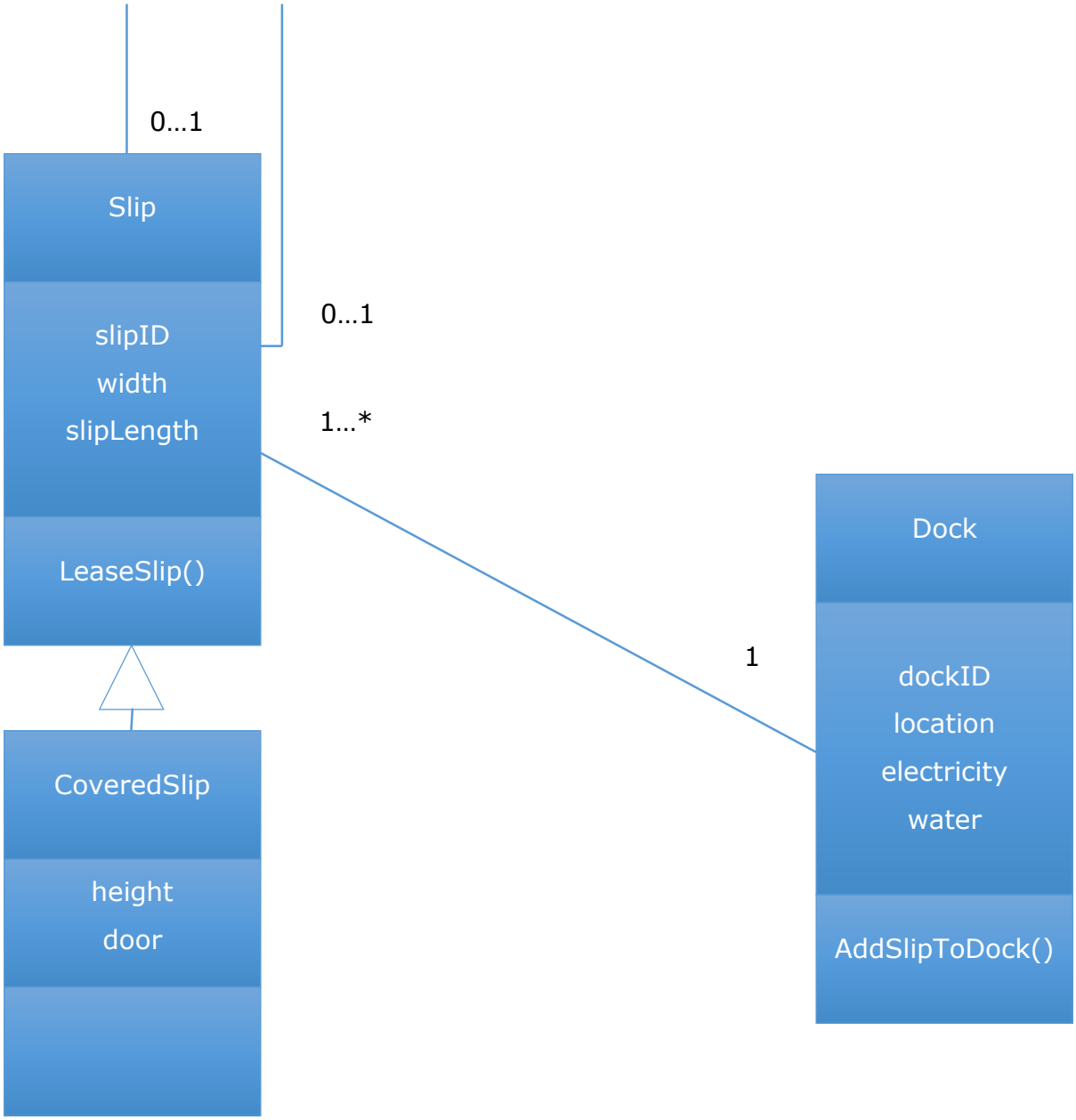
**A dock contains slips**



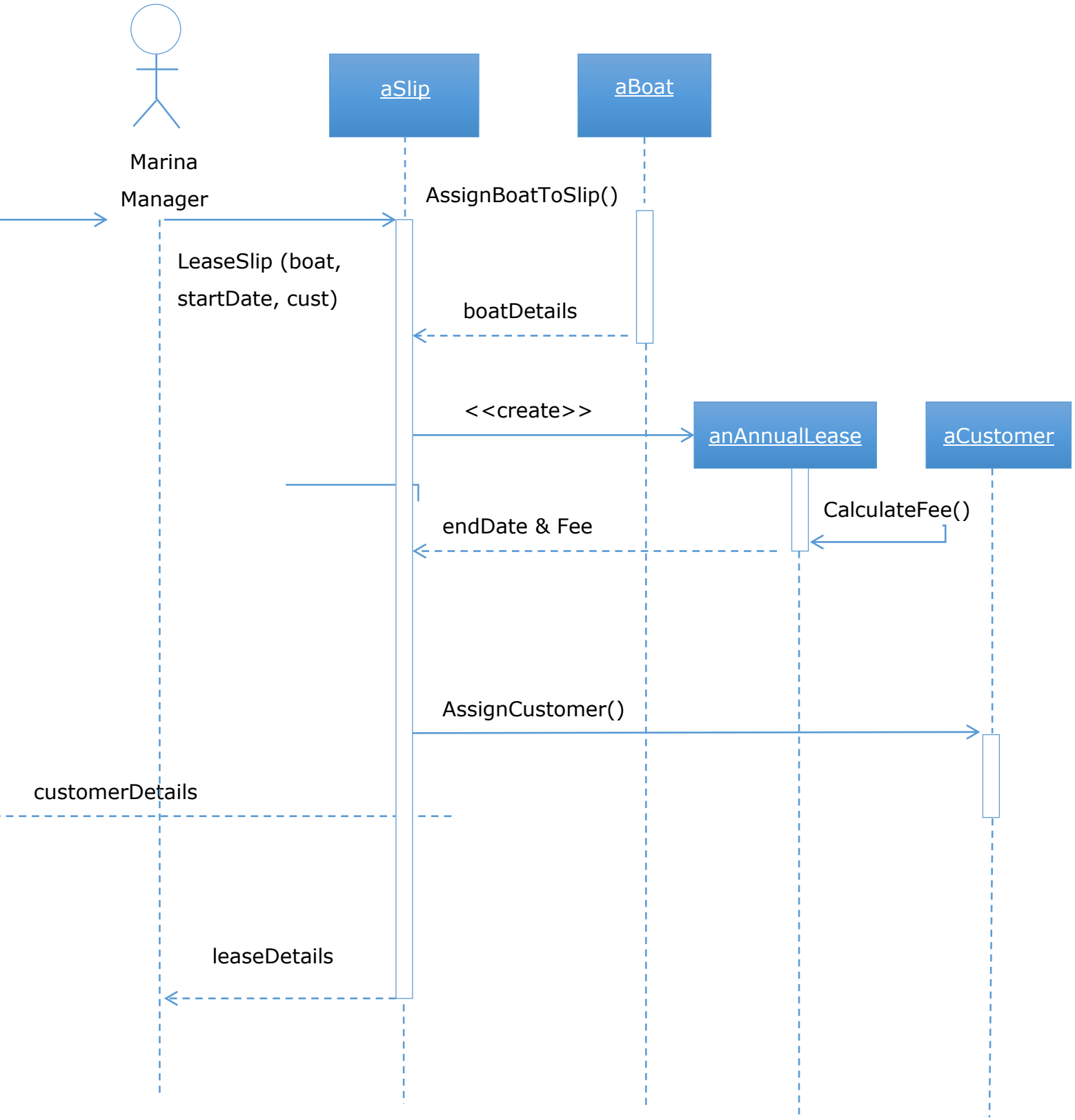
**Popeye Marina Project Class Diagram**




Lease
amount
startDate
endDate
CalculateFee()
AnnualLease
payMonthly
balanceDue
CalculateFee()
DailyLease
numberOfDays
CalculateFee()




**Sequence diagram for scenario *lease annual slip to existing customer***


aSlip
aBoat
Marina
Manager
AssignBoatToSlip()
LeaseSlip (boat,
startDate, cust)
boatDetails
<<create>>
anAnnualLease
aCustomer
CalculateFee()
endDate & Fee
AssignCustomer()
customerDetails
leaseDetails

# Assessment Task 1

## Apply introductory object-oriented language skills

The instructions to complete this assessment are included on the following page. Follow the instructions with each question.

This assessment should take you about **10 hours** to complete.

**When you are confident that you have met all requirements for this assessment task, upload your file using myIvy for marking.**

Make sure your work follows the style guide and naming conventions presented in the Style Guide document available in the *Learning and Study Support* section of myIvy.

# Assessment Task 1: Apply introductory object-oriented language skills

**Your tasks:**

1. Gather client requirements

   Liaise with your client (your facilitator) to gather further information about the project through a formal interview (online students can use a virtual meeting tool).

   a. Write a series of questions (open-ended, close-ended, range-of-response type of questions)

   b. Using Skype, WizIQ or similar technologies, perform the interview with your client (facilitator).

   c. Document the interview in an Interview Summary Report (see sample in the workbook)

2. Contract, production schedule and costing breakdown

   a. Create a contract for your client to sign off (Note: A sample has been provided for you to adapt)

   b. A production schedule detailing what and when tasks will be completed (in hours/days)

   c. A cost-breakdown for the entire project from:

      i. Planning

      ii. Web design

      iii. Web development

      iv. Content

      v. Content management

      vi. Web hosting

3. Design and build website

   a. Create a navigation diagram for your proposed site to include the following:

i. Home
ii. About us
iii. Products/Services
iv. Contact us
v. Slip Booking

b. Use Visual Studio as an Integrated Development Environment to design and build a web application for Popeye Marina using ASP.NET, HTML, CSS, and C#. NET as the object-oriented programming language behind the code.

The system must be developed in accordance with the design specification as set out in the system requirements and object-oriented design documents provided (i.e., class diagrams, use cases etc.). You must use a modular programming approach, with reusable software modules following reusable principles. This means you need to create a class library and incorporate it into a Web application project (see Assessment 2 Part B).

4. Test application

a. The web application must be fully tested before submission. This means all syntax errors/warnings must be fully resolved prior to submission. All tests conducted must be fully documented and submitted as part of your evidence (i.e. test cases, test scripts, test results etc.).

**Performance Criteria**

The following documentation/coding criteria must be followed for each submission:

1. Use the C#. NET coding syntax rules and best practices
2. Select and use language data types, operators and expressions to create clear and concise code
3. Use the appropriate language syntax for sequence, selection and iteration constructs
4. Use modular programming approach to make reusable code
5. Apply arrays, including arrays of objects
6. Use standard-array processing algorithms such as insertion and deletion algorithms and search
7. Read and write data from and to text files (i.e., customers)
8. Implement classes that contain/uses:
    a) Primitive members or instance variables
    b) Multiple options for object construction
    c) User-defined aggregation (object instance or member variables)
    d) Inheritance to at least two levels of depth
    e) Polymorphism at a simple level through inheritance to enable easy extension of code
9. Use eXtensible markup language (XML) to provide information on slips and boats. XML must be fully validated using an XML validation report as evidence.

10. Use an ***integrated development environment***, in particular the language debugging facilities, to debug code

    a) Test document includes debugging techniques/tools used

    b) Tests conducted, e.g., black box, white box tests

    c) Test documentation e.g., test cases, test scripts, test results etc.

For troubleshooting and assistance refer to the appropriate online documentation for the language **http://msdn.microsoft.com/en-us/library/dd831853(v=vs.100).aspx**

**Deliverables**

The following deliverables must be submitted for this assessment:

1. A client liaison interview feedback report
2. Contract, production schedule, and cost breakdown
3. A fully tested, fully functional web application that follows the documentation and coding standards set out above in the requirements. The code, including all relevant files associated in the code must be submitted as a zipped file organised in appropriate folders (e.g. Images in the Images folder, Classes in the Classes folder etc.)
4. All test documentations associated in testing the code including validating the XML structures (e.g. test cases, test scripts, test results etc.) must be submitted as part of your e-Portfolio

# Assessment Task 2

The instructions to complete this assessment are included on the following page. Follow the instructions with each question.

This assessment should take you about **10 hours** to complete.

**When you are confident that you have met all requirements for this assessment task, upload your file using myIvy for marking.**

Make sure your work follows the style guide and naming conventions presented in the Style Guide document available in the *Learning and Study Support* section of myIvy.

# Assessment Task 2: Use a library or pre-existing components

## Part A Discussion Paper

### Scenario or background information

As a member of the Australian Computer Society (ACS), you have been asked to prepare a short discussion paper explaining the virtues of reusable code in object-oriented programming. You decided to use the Popeye Marina Web Development project as a parent project plus a fictitious project for Brutus Shed Web Development where reusable components from the Popeye Marina Web Application Project can be reused.

### Requirements

In order to be assessed as competent in this assessment, you will need to satisfactorily perform the following tasks:

1. Identify all potential reuse components in the Popeye Marina Web Development project. For example, classes, form elements, i.e. web forms, buttons, templates etc.
2. Explain how the reusable components from Popeye Marina Web Development project can be reused in the Brutus Shed Web Development Project
3. Explain how the development efforts for Brutus Shed Web Development Project can be significantly reduced using reusable components from similar projects such as the Popeye Marina Web Development project

4. Explain the issues associated with reusing code, such as:

    a. Cost of implementing reuse component (**NOTE:** You need to provide a costing scenario clearly identifying the cost factors associated in either developing the code internally, or buying a third-party component.)

    (For example, if it takes $2,000 to write code internally, how much would it cost to source code from third party libraries if a third-party component typically costs the team 1 to 20 percent of what it would cost to develop internally?)

    b. Technical impact on parent project design, such as time constraints associated with learning, configuring and integrating reuse components into the current architecture.

    c. Reuse component vendor licensing issues, such as copyright

5. Explain the document selection, evaluation and decision processes you went through as part of the parent project-design documentation when finalising selection of reuse components

**Deliverables**

The following deliverables must be submitted for this assessment:

1. A discussion paper containing all the information listed above (1500 words approx. with references (Harvard/APA))

# Part B Demonstration

### Scenario or background information

As part of your discussion, the ACS also wants you to build a very simple demo program showing how code can be reused from a library to other web development projects. In this scenario, you need to create a "new" web application (similar to the web application created in Assessment Task 1 for the Popeye Marina website). Instead of building the application from "scratch", you need to reuse the code components from the parent project, which is the Popeye Marina website. The reusable codes may include user-defined classes, web forms, templates etc.).

Please note that you DO NOT NEED to create a "complete" application. Just one page will do as long as you are able to demonstrate that reusable components from the Popeye website are integrated into the Brutus website.

### Requirements

In order to be assessed as competent in this assessment, you will need to satisfactorily perform the following tasks:

1. In your demonstration, be sure to demonstrate how reusable components (i.e. web forms, templates, user-defined classes from the Popeye Marina Web Development project) can be incorporated in the parent project (Brutus Shed Web Development Project)
2. The demonstrated web application is tested to full functionality and resolved all reuse component dependencies (i.e. no warnings and/or error messages)

## Deliverables

The following deliverables must be submitted for this assessment:

1. A fully functional test program clearly showing fully integrated reusable components from the Popeye Marina Web Development project (all reuse component dependencies resolved, meaning all reusable components imported from the Popeye website fully integrates with the components of the Brutus website without any error messages and/or warning messages). Demonstrate the program for your facilitator.

# Assessment Task 3

The instructions to complete this assessment are included on the following page. Follow the instructions with each question.

This assessment should take you about **5 hours** to complete.

**When you are confident that you have met all requirements for this assessment task, upload your file using myIvy for marking.**

Make sure your work follows the style guide and naming conventions presented in the Style Guide document available in the *Learning and Study Support* section of myIvy.

# Assessment Task 3: Implement and use web services

## Part A Practical tasks

### Scenario or background information

There are many types of web services available, such as Google Maps. You are required to integrate a web service of choice into the home page of Popeye Marina's website. Some samples of web services include current weather forecasts or current times.

### Requirements

In order to be assessed as competent in this assessment task, you will need to satisfactorily perform the following practical tasks:

1. Use an integrated development environment to build web service components that adheres to W3C standards (NOTE: These standards can be accessed from the W3C website)

2. Implement complex code algorithms required for web service functionality. The following Web Service method may be used (or find other examples on the Internet):

```
public class Service1 : System.Web.Services.WebService
{
    [System.Web.Services.WebMethod()]
    public double ConvertTemperature(double
    dFahrenheit)
    {
       return ((dFahrenheit - 32) * 5) / 9;
    }
```

3. Using Visual Studio, write code to implement a web service and create a Web application that connects to and uses the Web service using UDDI and SOAP. For example, write an application that will retrieve an XML document from a public Web service using SOAP and UDDI. Make sure that the XML file is validated using a validator program. Also write a code that will read.

4. Implement, test and publish the web service by simulating the publication of the web service through a virtual machine. Re-factor code to improve the efficiency of the code. Do not forget to implement exception-handling routines in code.

5. Build a WSDL file and provide web access to a WSDL file via a uniform resource locator (URL)

**Deliverables**

The following deliverables must be submitted for this assessment:

1. A fully functional web application with a web service function

# Part B Short answer questions

## Requirements

In order to be assessed as competent in this assessment task, you will need to provide short answers to the following ten (10) questions:

*Question 1*

What is the purpose of the WSDL?

*Question 2*

What are the three main elements that comprise the WSDL?

*Question 3*

What is the purpose of UDDI?

*Question 4*

What are the differences between public, extra-enterprise and intra-enterprise UDDI registry deployments?

*Question 5*

What is the relationship between WSDL and UDDI?

*Question 6*

Your boss would like to use a third-party web service already established on the Internet. Your task is to implement a third-party Web service. Visit a website such as www.uddi.org, www.xmethods.net, www.asp.net, or www.gotdotnet.com. Locate one Web service using UDDI and document the information about the Web service such as:

- Name of the web service
- URL where you found the web service
- Description of the web service
- Who owns the web service

- The costs required to use the web service
- The requirements to consume the web service
- The procedures for consuming the web service

*Question 7*

What is the purpose of SOAP?

*Question 8*

What is the relationship between UDDI and SOAP?

*Question 9*

Identify the basic structure and explain the processing of a SOAP message.

*Question 10*

Outline a basic web service architecture.