



Unit: Introduction to Programming

Assignment title: Capital Cruises

Sample Assignment

Important notes

- Please refer to the Assignment Presentation Requirements for advice on how to set out your assignment. These can be found on the NCC Education *Campus*. Click on Policies and Advice in the left-hand menu and look under the Advice section.
- You must read the NCC Education documents 'What is Academic Misconduct? Guidance for Candidates' and 'Avoiding Plagiarism and Collusion: Guidance for Candidates' and ensure that you acknowledge all the sources that you use in your work. These documents are available on *Campus*. Click on Policies and Advice in the left-hand menu and look under the Policies section.
- You **must** complete the '**Statement and Confirmation of Own Work**'. The form is available on *Campus*. Click on Policies and Advice in the left-hand menu and look under the Policies section.
- You must submit a paper copy and digital copy (on disk or similarly acceptable medium). Media containing viruses, or media that cannot be run directly, will result in a fail grade being awarded for this assessment.
- All electronic media will be checked for plagiarism.

Background information

Complete the following computer programming tasks using Visual Basic.

For each task you must test the programming code you create.

The evidence you **must produce is a working VB program and a Word document** containing the following.

- Screenshots of the user interface
- Pseudocode
- Completed Object Definition Sheet
- The Visual Basic program code, with relevant comments (i.e. annotated)
- Screenshots of the user interface
- Simple test criteria
- Completed Test Log
- Screenshots of the output generated when the program code is run

It would be a good idea to use the Windows Snipping tool to assemble this Word document.

You do **not** have to provide any general commentary on your work in a separate word-processed document, but you **do** have to provide short comments on the code to explain what each function or segment of code does.

You do **not** have to provide any history of what debugging you may have done.

It is very important that the program code is clear, the outputs are designed to be easy to understand and your Word document is well presented.

Introduction

This assessment is worth **100%** of your overall grade.

Scenario

Capital Cruises have asked you to create an application to allow customers to book a cruise with them.

Customers **must** select one and only one of each of the following options for their cruise:

- Room type (4 options: interior room, balcony room, mini-suite, suite)
- Food package (3 options: basic, basic plus soft drinks, fully inclusive)

Customers **may** optionally select one or more of the following options for their cruise:

- Shore excursions package
- Spa package
- Fitness package
- Internet package

The costs for each option are shown in the tables below.

Room type	Cost
Interior	\$1200
Balcony	\$1600
Mini-Suite	\$2400
Suite	\$3500

Food package	Cost
Basic	\$0 (included in cost of room)
Basic plus soft drinks	\$150
Fully inclusive	\$400

Optional packages	Cost
Shore excursions	\$300
Spa package	\$250
Fitness package	\$100
Internet package	\$75

Your application should use an array to store the four room type options. Arrays should also be used to store the prices for each room type. You should also use an array to store the food package options and a separate array to store the food package option prices.

Once the purchase is finalised, the price should be displayed, and the customer should be directed to a new screen which requires them to enter their name, address (house number, street name, town/ city, post code) and their credit card number. Credit card numbers are 16 digits long and should be entered with no spaces between numbers.

The customer will require a receipt for their transaction. On completion of the transaction, the following details should be written to a file called CruiseDetails.txt as a receipt for the customer:

- Customer name
- Room type
- Food package
- Which optional packages have been purchased?
- Total cost of purchase

Hints on design and implementation

- Plan your GUI layout before starting to create the program.
- Think carefully about which controls are best suited to allow customers to choose components from the options available.
- Create lists of options for each type of component: these should be based on the options given above.
- Think carefully about what validation checks are required for certain components.

Tasks

This assignment is to design, produce, by programming in Visual Studio Community 2019, and test, the software that Top Travel requires.

This task has been broken down into a series of detailed tasks to help you complete it.

You can gain good marks without fully completing a working program. Make sure you attempt all parts – you can gain marks on later parts even if you have not completed all the earlier parts.

Task 1: Form Design – 10 marks

Design your form layout and create two VB forms:

- A form which enables the program to read in the following inputs:
 - The room type required
 - The food package required
 - The optional packages (if any) required

These should either be entered using a drop-down menu or other method of selection that does not require typing, such as radio buttons or check boxes. The method chosen for each of these should be appropriate to whether only one option can be selected, or multiple options can be selected.

This form should have a Quote button to allow the user to calculate the price of the cruise based on the options they have selected. There should be a second button for purchasing the cruise. This Purchase button should be disabled initially, and should only be enabled once the Quote button has been pressed. The Purchase button should take them to the next form.

- A form which enables the user to enter their customer details and payment details, and print their receipt to file. This form will need to take in most values via textboxes, and will require appropriate data validation for user input. This form will have two buttons. One to enter their details and one to print the receipt to file.

Task 2: Pseudocode and Object Definition Sheet – 20 Marks

- Write pseudocode to design the event procedure for calculating the cost of the cruise when the Enter button is pressed on the first form.
- Write the pseudocode to design the event procedure for validating the city name on the second form. City name is a compulsory part of the address (it cannot be null) and must be between 2 and 25 characters in length.
- Produce an Object Definition Sheet for the full program

Task 3: Implementation – Options Form – 25 Marks

- Create the arrays to store the room types, room prices, food package options and food package prices
- Create the other variables required to store the prices for the optional items.
- Set up the form and controls.
- Fill the combo boxes or other chosen controls from the arrays. You should use a for loop to loop over the arrays and add the items to the combo boxes.
- Write the event code to calculate the total cost of the cruise based on the selected options. Do this in a separate function which is called from the button click event. Enable the Purchase button once the
- Write the event code to store the price and display the next form if the customer accepts the quoted price.

Task 4: Implementation – Details and Receipt Form – 25 Marks

- Create the variables to store the customer details
- Implement data validation to ensure no fields are empty
- Implement data validation to ensure the town/ city name is between 2 and 25 characters in length
- Implement data validation to ensure the postcode is 7 characters in length
- Implement data validation to ensure the credit card number is 16 digits in length
- Write the event code to store the details in appropriate variables. Do this in a separate function which is called from the button click event.
- Write the event code to write the customer name, cruise options selected and cruise cost to file. Do this in a separate function which is called from the button click event.

Task 5: Testing – 20 marks

- Design a testing strategy and complete a Test Log for each user input (including selecting combo box and check box options) and program calculations.
- Ensure you test all types of data – normal (valid), extreme (boundary), and exceptional data. All data validation conditions for text boxes should be tested. Tests should be documented using a Test Log (see template) and screen shots of tests provided as evidence of testing.

Guidance

The assessment of your project will depend in part upon the quality of the documentation that you have produced.

- Restate the specification of the assignment by listing the Required Outcomes.
- Take the time required to design the assignment before you type any program code. Follow an appropriate design and documentation sequence, e.g. using flowchart(s) and pseudocode.
- Always document your designs **before** you implement them.
- Keep up-to-date Object Definition Sheets and do basic tests at each stage of the development.
- Provide a detailed design including, where appropriate, the design of any algorithms.
- Build in error handling to involve meaningful messages that would help with any future maintenance of the software.
- Annotate all implementation.
- Design a testing strategy.
- Justify the design of suitable comprehensive test data.
- Maintain and complete a test log.
- Show evidence of testing.
- Where appropriate, detail any major corrective action that you have taken in the light of the testing process.

Submission requirements

A word-processed document must be submitted incorporating the full documentation of all the significant aspects of the development of the assignment above. The document should be submitted both in paper form and digital form.

Refer to the Guidance above when producing your final documentation.

You are required to submit a publishable copy of the compiled system together with installation notes.

This publishable copy, that includes a setup file, should be on an appropriate medium (CD, USB flash drive, etc.).

Candidate checklist

Please use the following checklist to ensure that your work is ready for submission.

- Have you read the NCC Education documents 'What is Academic Misconduct? Guidance for Candidates' and 'Avoiding Plagiarism and Collusion: Guidance for Candidates' and ensured that you have acknowledged all the sources that you have used in your work?
- Have you completed the 'Statement and Confirmation of Own Work' form and attached it to your assignment? **You must do this.**
- Have you ensured that your work has not gone over or under the recommended word count by more than 10%?
- Have you ensured that your work does not contain viruses and can be run directly?

