Assignment 1

Writing Code and Code review

Due Dates:
Part I due on 18th July, 2024 Thursday, 11:55 pm - Week 5
Part II due on 22nd July, 2024 Monday, 11:55 pm - Week 6
Part III due on 26th July, 2024 Friday, 11:55 pm - Week 6

Assessment Aim

This assessment assesses your ability to carry out core steps in programming that you have learned from week 1 through to week 5 in the course.

Learning Outcomes

The learning outcomes to be assessed in this assessment are:

- How to effectively use variables, conditionals and loops (LO1)
- Design, construct and test simple programs (LO2)
- Implement good programming practices (LO4).

By succeeding in this assignment, you will be in a position to implement most kinds of programming tasks encountered in future.

Task Overview

This is an open-book group assignment. The group size is 3 or 4.

There are three parts in this assessment.

Part One - Individual work: 10% (due at end of week 5, 2024)

This part of the assignment comprises four sections and each member is responsible for completing **ONLY one section**.

Each member is required to:

- write a set of functions that satisfy the given requirements
- review your code carefully
- submit your section to Moodle for marking.

To support you in reviewing your code, we provide a small example set of inputs and correct outputs. Please note that tests or example outputs never guarantee code correctness, so you need to check the correctness of your solutions.

Part Two - Peer code review: 5% (due at the start of week 6, 2024)

Each member of the team is required to:

- review the code written by one other team member in a way so that everyone's code is reviewed
- use the provided checklist to ensure the quality of your peer code review
- submit your code review to Moodle for marking
- keep a back-up copy of their work and share their individual work with their team members

In conducting peer code review, use the provided checklist below. You can also use GenAI to find out what are the industry practices for peer code review.

Note: the industry practise might suggest about removing errors, for the sake of this assignment we would only like you to identify the problems and provide feedback to your team member.

Part Three - Combined Group work: 5% (due at the end of week 6, 2024)

Each team member will:

- reflect on the peer review for their original code
- address any improvements that are required.

The whole team will:

- combine all the sections into one program (Python file)
- write one function together which will call all the functions implemented in Part One of the assignment.

The aim of this section is to enable students to work with the code developed by other team members and integrate their code successfully.

Guidance on the use of Generative AI

Generative AI tools CANNOT be used in Part One and Part Three of this assessment.

Generative AI tools are not restricted in **Part Two** of this assessment task. For example, you may use Chat GPT to search for information, brainstorm ideas, summarise information and/or explain it in simpler terms to help you with understanding.

Any use of generative AI must be appropriately acknowledged and you must put all your prompts and generative AI output in a separate section at the end of your code review.

Assessment Criteria

- Variables, Statements and Expressions
- Conditionals and Iteration
- Iteration and Sequences
- Dictionaries, Functions, Scoping and Namespaces

Submission Procedure for each Part

Your assignment will not be accepted unless it meets the requirements of the submission procedure:

Follow these steps to submit your full assignment.

- Include a cover sheet in your submission (Part I,II and III), providing these details of your team: assessment details, names of group members and corresponding student numbers.
- Save your file(s) into a zip file called AssignmentDetailsTeamDetails.zip (e.g Assignment1Part1s123456.zip)
- Submit your zip file containing your entire submission to Moodle.
- Note that your assignment will NOT be accepted unless you have completed all of the steps mentioned above.

Late Submission

Unless an extension or special consideration has been granted, assignments submitted after the due date will receive a late-submission penalty of 10 percent of the available marks in that task. A further penalty of 10 percent of the available marks will be applied for each additional day (24-hour period including weekends and public holidays), or part thereof, the assessment task is overdue. **This applies to all the parts of the assignments.**

Assignments submitted 7 days after the due date will NOT be accepted and will receive a mark of zero. Students may not receive feedback on any assessments that receive a mark of zero due to a late-submission penalty.

Important notes on Academic Integrity

- Please ensure that you have read and understood the university's procedure on plagiarism and collusion available at https://www.monashcollege.edu.au/__data/assets/pdf_file/0005/1266845/Student-Academic-Integrity-Diplomas-Procedure.pdf. You will be required to agree to these policies when you submit your assignment.
- Make sure your work is your own. Your code will be checked using advanced plagiarism detection systems against codes produced by other students and codes available online.
- Your program will be checked against a number of test cases. Do not forget to include comments to explain your code. If your implementation has bugs, you may still get some marks based on the attempted code. This is made difficult if code is poorly documented.

Assessment weighting

This assignment contributes 20% to your final mark.

- Individual work: 10%
- Code review: 5%
- Combined group work: 5%

Case Study

Yeppoon Caravan Park

The Yeppoon caravan park offers powered sites for your caravan which also includes water. The caravan park boasts a beautiful swimming pool, children's play area, a bar-b-que area, kiosk, coin laundry and amenities (showers and toilets) which are being cleaned constantly.

The management wants to encourage guests to stay more nights at the caravan park and they have decided to give the guests a discount for the more nights stayed.

The discounted pricing scheme is as follows:

- Up to five nights stay will be the standard price of $14.50 per night and $4.95 per guest.
- The next five nights (up to ten) will be $12.50 per night and $3.95 per guest.
- All nights stayed over ten nights will be $10.50 per night and $2.95 per guest.

Sundown Caravan Park

The Sundown caravan park offers powered sites for your caravan which also includes water. Some of the other features offered by this caravan park are: swimming pool, children's play area, a bar-b-que area, activity room, Free Wi-Fi, kiosk, coin laundry, dump point and amenities (showers and toilets) which are being cleaned constantly. The park is also allowing dogs.

Because of the increasing competition the management have decided to give the guests a discount for the more nights stayed.

The discounted pricing scheme is as follows:

- Up to three nights stay will be the standard price of $16.50 per night and 5.95 per guest. If four or more guests than 20% discount is provided.
- The next five nights (up to ten) will be $13.50 per night and $3.95 per guest.
- All nights stayed over ten nights will be $12.50 per night and $2.50 per guest.

Park4U Caravan Park

The park4U caravan park offers powered sites for your caravan which also includes water. The caravan park boasts a beautiful swimming pool, children's play area, a bar-b-que area, kiosk, coin laundry and amenities (showers and toilets) which are being cleaned constantly.

The management wants to encourage guests to stay more nights at the caravan park and they have decided to give the guests a discount for the more nights stayed.

The discounted pricing scheme is as follows:

- Up to four nights stay will be the standard price of $14.50 per night and $4.95 per guest. If five or more guests than 25% discount is provided.
- The next five nights (up to ten) will be $12.50 per night and $3.55 per guest.
- All nights stayed over ten nights will be $11.50 per night and $2.95 per guest.

Kohinoor Caravan Park

Kohinoor Caravan park provides large luxurious villas and cosy spa cottages to powered and ensuite caravan and camping sites plus all the others things a relaxing and fun holiday should include such as:

- Resort style swimming pool and outdoor spa
- Big screen movie room with complimentary latest release movies
- Huge, modern kids' playground
- Games room including air hockey, table tennis and loads more
- Fully equipped Camp Kitchen with oven, fridge, microwave and ample seating
- Modern amenities with under floor heating and fully equipped laundry with washers, dryers, ironing boards and clothes lines

With the increasing living expenses and less people coming to caravan parks, the management has decided to provide discounts to encourage people for more visits.

The discounted pricing scheme is as follows:

- Up to three nights stay will be the standard price of $18.50 per night and 6.95 per guest. If five or more guests than 25% discount is provided.
- The next five nights (up to ten) will be $14.50 per night and $5.95 per guest.
- All nights stayed over ten nights will be $13.00 per night and $3.95 per guest.

Part One: Individual work (10%)

Each member of the team will only pick one of the parks for the below implementation.

You are to write a function ParkNameStatistics() which will allow staff to enter the details of N booking names and the number of nights stay and guests for each booking. **N should be equal to the highest digit in your student ID**, use N=3 if your highest digit is less than three. The numeric literal value N, must be represented as a variable whose value is identified by code instead of hard coding. For each booking the program will prompt for and accept the booking name and the number of nights stay and guests for the booking, it will then display the charge (see sample output below for formatting details).

When all the bookings have been entered you need to report the maximum and minimum number of nights per booking and the relevant booking name, the average number of nights per booking and the total charges which have been collected.

The program should allow the user to:
1. For each of the N bookings: enter the booking name, and then enter the number of nights to stay and the number of guests. The program will output the charge for the booking. All dollar values will be formatted to two decimal places (refer to the provided sample screenshots for better understanding).

2. You must ensure the booking name is not blank and is not a number, so you must implement a validation loop to ensure that a booking name is entered. For this assignment, there is no need to ensure the name is a valid name (e.g. entering 'aabb' for the name would be allowed). The number of nights stay and number of guests must be greater than or equal to one and you will also need to implement validation loops to ensure that a valid number of nights (more than zero) and guests (more than zero) are entered. Store the booking as a list in a list of lists.

The program will number each booking in the input prompt.

3. When N bookings have been entered, you will output a heading for the statistics "Statistical information for **Name of the Park**", the minimum and maximum number of nights stay and the booking names with these minimums and maximums, and then what the average number of nights per booking is (formatted to two decimal places) (see sample output below). Note: If more than one booking has an equal maximum or minimum nights you just need to only output one booking name (preferably the first one).

4. Display a welcome message at the beginning "Welcome to the **Name of the Park** System" and an end message e.g. "Thank you for using the **Name of the Park** Management System" and the final line "Program written by<your student id>" (see sample output below).

Note: Avoid using magic numbers, for all values such as number of nights and discounts etc. use variables to store the corresponding values. Should use modular programming with each function performing one task only.

Part Two: Code review (5%)

Each member of the team is required to review the code written by one of the other members of the team, in a way that everyone's code is reviewed. You could use the following checklist to perform your code review.

Use the checklist provided below to ensure you have completed all parts of the review.

	Criteria	Yes/No	Comments
1	File header comments present	□	
2	Function header comments present	□	
3	Doc strings present	□	
4	Proper indentation	□	
5	Proper spacing	□	
6	Meaningful function and variable names	□	
7	Efficient programming practices used	□	
8	Redundant code present	□	
9	Modular programming approach used	□	

If the program has errors then include the following information in your report:

- Line number in which the error exists
- Type of error
- Suggestions to fix the error

Note: In your submission, provide clear information about the team members code that you have reviewed. In your submission include a copy of the code that you have reviewed.

Part Three: Combined Group work (5%)

Combine all the sections and implement the following:

Write a function that will display a menu with the following options:

1. Yeppoon Caravan Park
2. Sundown Caravan Park
3. Park4U Caravan Park
4. Kohinoor Caravan Park
5. Display park data
6. Exit

Based on the option selected, the corresponding function should be called. For example, if option 1 is selected, call *YeppoonParkStats()*.

Write another function named *displayParkData()* that is called when option 5 is selected. If Option 5 is selected before option 1, 2, 3 or 4 then display an error message saying, *"Please gather the individual park statistics first"* and again display the menu.

The function should be able to compare the total booking charges for each park to find the park with the highest earnings. And return a list with the park details (name of the park, number of bookings, total earnings) that has the highest earnings.

Note:

- If the team has less than four members or if any member is inactive or did not complete their work, then use the default statistical data provided.

Marking Guidelines

Part One - Individual work

#	Criteria	Section 1	Allocated marks	Awarded marks
1	**Defines the function correctly, using the correct function name and arguments**	Names function as *ParkNameStatistics*, no parameter	1	
2	**Correctly used loops to read N booking details**	Uses loops correctly to read N user input	1	
3	**Validation for Booking Name**	Booking name is validated correctly	1	
4	**Validates number of nights and guests**	number of nights is validated correctly (1 mark) number of guests is validated correctly (1mark)	2	
5	**Calculates Booking charges correctly**	Calculates charge of each booking correctly (1 mark) Correct use of nested selection statement (1.5 marks)	2.5	
6	**Stores each record in the bookingDetails dataset**	Appends each booking record as a new list to the dataset	1	
7	**Correct calculation for minimum**	Minimum nights and booking name are correct	1	
8	**Correct calculation for maximum**	Maximum nights and booking name are correct	1	
9	**Correct calculation for average**	Average nights per booking is correct	1	
10	**Welcome and Exit message**	Welcome and Exit message displayed	1	
11	**Values correctly formatted**	All numerical values formatted to two decimal places	0.5	
12	**Modular Programming**	Used helper functions	1	
13	**Deductions**	Penalty applies if submission procedure not followed: • Missing cover sheet • Incorrect file name • Incorrect file format	3(up to 3 marks)	
	Penalties			
	Code do not work (Apply 50% penalty)			
	Plagiarism (Up to 100% penalty depending on the misconduct)			
	Late penalty (-10% every day, zero marks after 7 days)			
	Total raw marks		15	
	Percentage score out of 10%: (Score out of 15 Marks ÷ 15 Marks) × 10 Marks			

Part Two - Peer review

#	Criteria	Allocated marks	Awarded marks
The review includes assessment of the following:			
1	Use of File header comments	0.5	
2	Use of Function header comments	0.5	
3	Use of Doc strings	0.5	
4	Use of indentation	0.5	
5	Use of spacing	0.5	
6	Function and variable names usage	0.5	
7	Use of efficient programming practices	0.5	
8	Presence of Redundant code	0.5	
9	Modular programming approach	0.5	
10	Provision of meaningful feedback to improve the codes	0.5	
11	Errors identified (if no errors then mentioned accordingly)	0.5	
12	Deductions (if submission procedure not followed and no clear information about the code reviewed, deduct up to 3 marks) • Missing cover sheet • Incorrect file name or format • Not clear whose/what code is reviewed	3	
	Penalties		
	Plagiarism (Up to 100% penalty depending on the misconduct)		
	Late penalty (10% every day, zero marks after 7 days)		
	Total marks	5.5	
	Total out of 5% (Score out of 5.5 Marks ÷ 5.5 Marks) × 5 Marks	**5**	

Part Three - Combined Group work

#	Criteria	Allocated marks	Awarded marks
The combined group work:			
1	Defines the function correctly, using the correct name and correct arguments	2	
2	Displays the menu options clearly	2	
3	Uses loops and decision structures appropriately to process user input	2	
4	Uses function calls correctly when responding to user input	2	
5	Allows the user to control when to return to the menu	2	
6	Displays an appropriate error message if incorrect input is used	1	
7	Includes an appropriate exit	1	
8	Correctly calculates the highest earning park	2	
9	Stores the Park details correctly in the list	2	
10	Returns the correct results	2	
11	Shows improvement in individual work based on the feedback from peer's code review	2	
12	**Deductions** • Missing cover sheet • Incorrect file name or format • Code merged correctly written by all individual members	Penalty applies if submission procedure not followed	3(up to 3 marks)
	Penalties		
	Code does not work (Apply 50% penalty)		
	Plagiarism (Up to 100% penalty depending on the misconduct)		
	Late penalty (10% every day, zero marks after 7 days)		
	Total raw scores	**20**	
	Percentage score out of 5% (Score out of 20 Marks ÷ 20 Marks) × 5 Marks		

Refer to the below sample screens for more information:

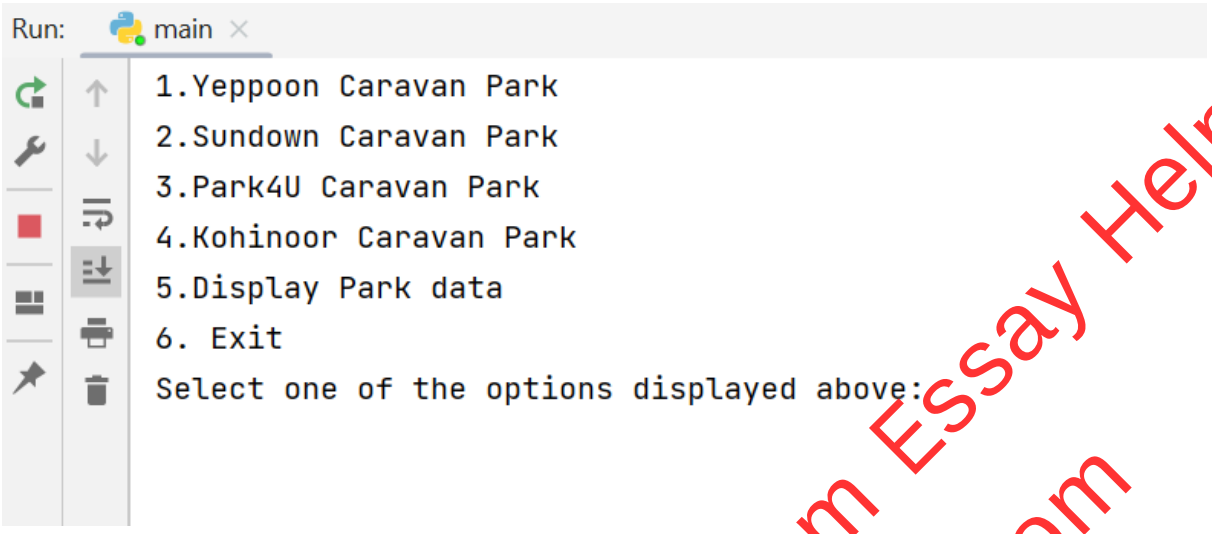
1. Example screen asking the user to enter booking details:

```
Welocme to the Yeppoon Caravan Park Management System
Please enter booking name 1 ==> Mandeep
Enter the number of nights stayed for Mandeep ==> 5
Enter the number of guests stayed for Mandeep ==> 4
The charge for Mandeep for 5 night(s) and 4 guest(s) is 34.3
Please enter booking name 2 ==>
```

2. Sample screen for all bookings for the park:

```
Enter the number of nights stayed for Haidar ==> 6
Enter the number of guests stayed for Haidar ==> 4
The charge for Haidar for 6 night(s) and 4 guest(s) is 28.3
Please enter booking name 3 ==> Yasmeen
Enter the number of nights stayed for Yasmeen ==> 7
Enter the number of guests stayed for Yasmeen ==> 5
The charge for Yasmeen for 7 night(s) and 5 guest(s) is 32.25
Please enter booking name 4 ==> Suman
Enter the number of nights stayed for Suman ==> 12
Enter the number of guests stayed for Suman ==> 7
The charge for Suman for 12 night(s) and 7 guest(s) is 31.15
Please enter booking name 5 ==> Bella
Enter the number of nights stayed for Bella ==> 3
Enter the number of guests stayed for Bella ==> 2
The charge for Bella for 3 night(s) and 2 guest(s) is 24.4
Please enter booking name 6 ==> Morgan
Enter the number of nights stayed for Morgan ==> 8
Enter the number of guests stayed for Morgan ==> 5
The charge for Morgan for 8 night(s) and 5 guest(s) is 32.25
[['Mandeep', 5, 4, 34.3], ['Haidar', 6, 4, 28.3], ['Yasmeen', 7, 5, 32.25], ['Suman', 12, 7, 31.15], ['Bella', 3, 2, 24.4], ['Morgan', 8, 5, 32.25
Thank you 2346215 for using the Yeppoon Caravan Park Management System
```

3. Display menu screen



4. Example screen if option 5 is selected before getting any booking details.