Question 1

1. State the problem – The problem is to design and code an application which can accept and output data to help the user create a budget monthly. It will allow the user to input their monthly income and expenses and calculate their budget for the month. It should also be able to allow the user to repeat the process to create different budgets.
2. The inputs are – Monthly income and amounts for each category. The outputs are – Total expenses and remaining balance.
3. Simple example –

Income is 5000

Expenses are 2000 rent, 500 groceries, 200 utilities and 400 for entertainment.

The expenses would be 3100

The remaining balance would be 5000-3100 = 1900

1. Pseudocode –

Ask user for monthly income

Loop until the user is done entering expenses

Calculate total expenses

Display total expenses and remaining balance

Ask the user if they want to do another budget

1. Test data for code

Question 2

1. Poor variable names – The variable “v” is a poor variable name and should be changed to something more meaningful such as “volunteer”.
2. The code does not have input validation and assumes the user will input a valid shift number.
3. There is no error handling in the code to validate inputs such as shift numbers and if there are any volunteers for a shift.
4. Some of the comments are not precise and could be misleading such as the “assuming user has enter a valid shift number” comment.
5. There is a typo in the variable name “result” as it is not defined anywhere else in the code.

Changes made to code

1. Function name changed to “assign\_shifts\_to\_volunteers”.
2. Changed variable names such as “v” to “shift\_assignments”
3. Added an error handling line which loops until a valid input is input
4. Improved comments.
5. Changed “result” to “shift\_assignments”
6. Added error handling for invalid inputs such as inputs that are not numbers.