Week 01 Class Exercise:

Demonstrating fundamental concepts of programming, following instructions.

Exercise Objectives

(1) To use logical thinking to solve a problem.

(2) To practice writing a set of instructions to solve a logical problem.

Equipment Required

Note: Pupils can work individually or in pairs for this exercise.

Item	Quantity
Copy of the route map (Appendix A)	One per pupil/pair or display
Copy of the route planning sheet (Appendix B)	One per pupil/pair
Pen, pencil or similar	One per group

Part 1: Set the Scene

(1) OPTIONAL: Place pupils into pairs.

(2) OPTIONAL: Ask the class to discuss what they think computer programming is.

(3) Explain the following to the class:

- In its simplest form, computer programming involves writing a set of instructions that a computer will follow, usually to achieve some task.
- Examples include printing a document, opening a web page or controlling the movement of a character in a game.
- Computers, while very fast, need to be told what to do by a person, and need step-by-step instructions for every task they are to complete.
- Computer programmers write these instructions in a language that computers can understand and follow.
- This exercise will demonstrate the kind of thinking computer programmers use and the approach they take to writing instructions.

Part 2: Bus Route Exercise

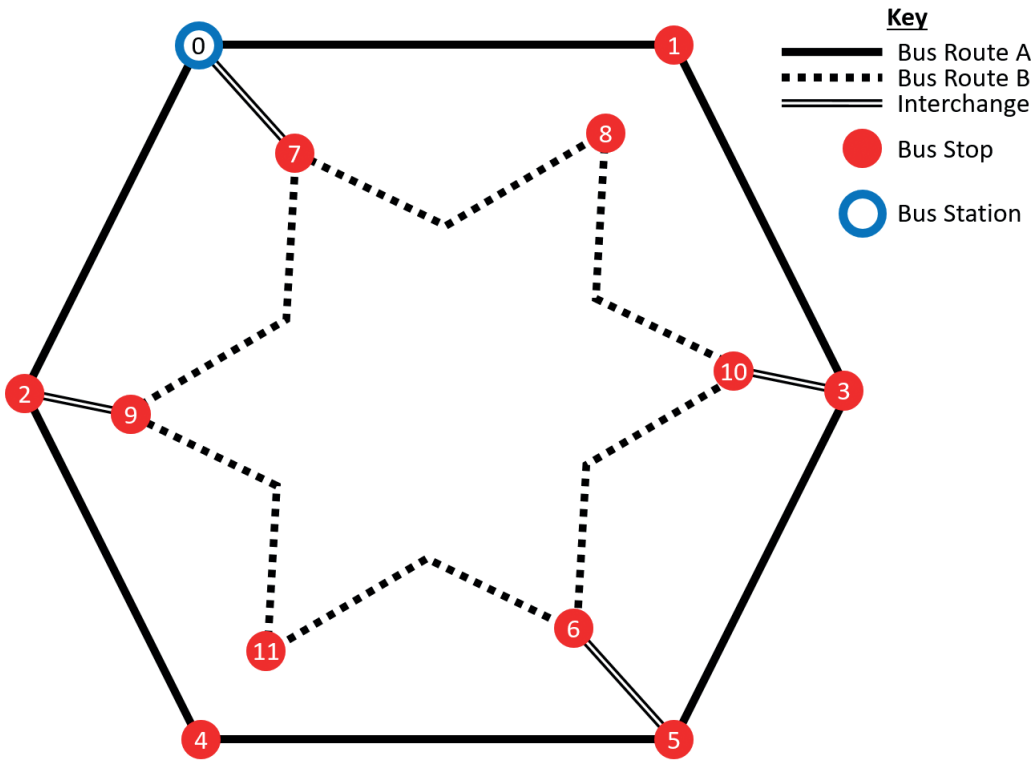
(1) Hand out or display the Bus Route Map and Bus Route Planning Sheet, then ask pupils to complete the exercise individually or in pairs.

(2) When they are finished, ask pupils to swap Route Planning Sheets and check each other's work.

(3) Explain that each row in the table represents one of many instructions that the bus needs to follow in order to solve the problem of a passenger visiting each stop on the route only once. Likewise, in programming terms, each row in the table represents one instruction a computer program would execute to solve a similar problem.

(4) Show the sample solution (Appendix C) to the class and see if any pupils got a different correct answer. Explain that most programming problems tend to have more than one correct answer.

Appendix A: Bus Route Map

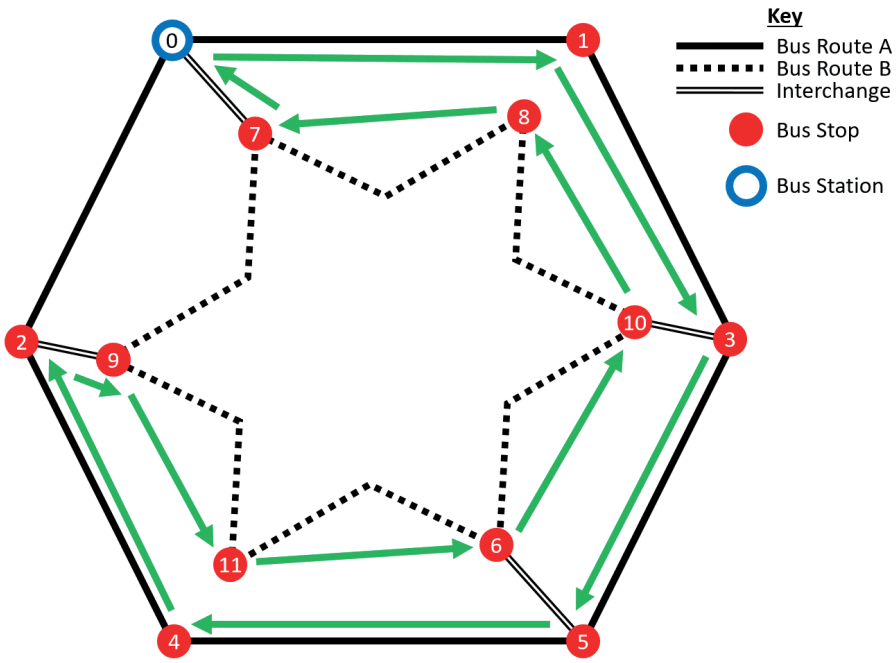


Appendix B: Route Planning Sheet

Starting at the bus station, plan a route so that a person can visit every stop just ONCE and end back at the bus station. Passengers can transfer between bus routes by using the interchanges marked on the map.

Step	Instruction	Place
1	Start At The	BUS STATION (0)
2	Then Go To	
3	Next Go To	
4	Next Go To	
5	Next Go To	
6	Next Go To	
7	Next Go To	
8	Next Go To	
9	Next Go To	
10	Next Go To	
11	Next Go To	
12	Next Go To	
13	Finally, Go To The	BUS STATION (0)

Appendix C: Sample Solution



Step	Instruction	Place
1	Start At The	Bus Station (0)
2	Then Go To	1
3	Next Go To	3
4	Next Go To	5
5	Next Go To	4
6	Next Go To	2
7	Next Go To	9
8	Next Go To	11
9	Next Go To	6
10	Next Go To	10
11	Next Go To	8
12	Next Go To	2
13	Finally, Go To The	Bus Station (0)