

# OCR Computer Science A Level

## 2.1.4 Thinking Logically

### Concise Notes



## **Specification**

### **2.1.4 a)**

- Identify the points in a solution where a decision has to be taken.

### **2.1.4 b)**

- Determine the logical conditions that affect the outcome of a decision.

### **2.1.4 c)**

- Determine how decisions affect flow through a program.



## Decision making in problem solving

- A **decision** is a **result reached after some consideration**.
- When solving problems and designing programs, many decisions have to be made.
- Examples include choosing the programming **paradigm** used and deciding how different information is collected from the user
- To simplify the decision making process, we **limit the solutions** we can pick from.
- When deciding on a programming language, you should consider what is suited to the task and your understanding of the language.
- Identifying where decisions need to be made early allows us to gather enough information about our options.
- In **flow charts**, a decision is shown by a diamond shaped icon. It can have two results, yes or no (**true/false**).

### Conditions that affect the outcome of a decision

- When making a decision, there are certain factors which determine the outcome you choose.
  - What is most effective?
  - What is most convenient?
  - Is this option reasonable?
- To make an appropriate decision, you need to **evaluate these conditions**.
- It is also helpful to order them from most important to least important.
- This makes it clearer how best to achieve your solution.

### Decisions affecting the flow of a program

- Decisions are made to determine how different parts of the program are completed.
- Say we are tasked with designing a simple runner game. We could design the game to be endless, or level-based.
- These decisions produce different routes through the program.
- It is also important to identify where decisions need to be made within the program, and plan out the outcomes of the decision made.
- Again, the program follows a different route depending on the decision made by the user.

