

A-Level Computer Science

AMBITIOUS

COLLABORATIVE

HAPPY

INTEGRITY

ENDURANCE

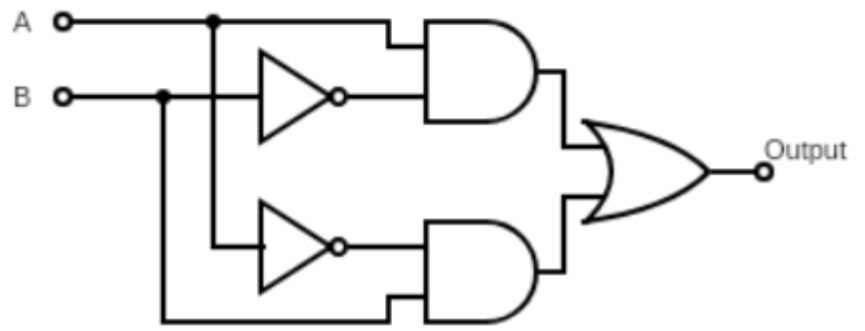
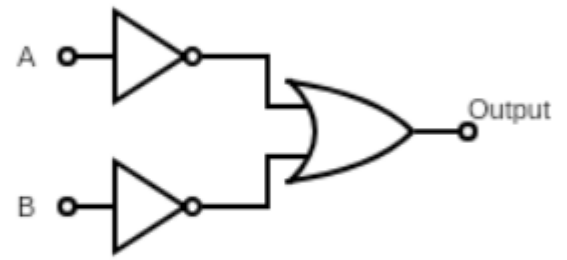
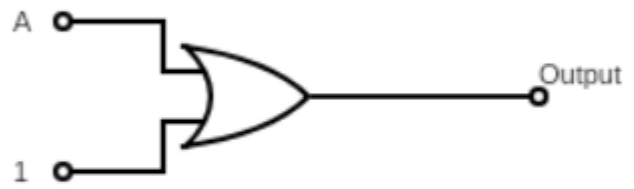
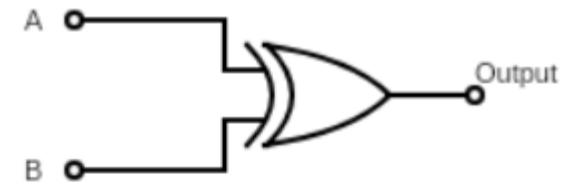
VERSATILITY

EXCELLENCE

Could you convert this pseudocode into actual code?

```
PlayerOneScore " 0
PlayerTwoScore " 0
OUTPUT "How many games?"
INPUT NoOfGamesInMatch
FOR NoOfGamesPlayed " 1 TO NoOfGamesInMatch Do
    OUTPUT "Did Player One win the game (enter Y or N)?"
    INPUT PlayerOneWinsGame
    IF PlayerOneWinsGame = 'Y'
        THEN PlayerOneScore " PlayerOneScore + 1
        ELSE PlayerTwoScore " PlayerTwoScore + 1
    ENDIF
ENDFOR
OUTPUT PlayerOneScore
OUTPUT PlayerTwoScore
```

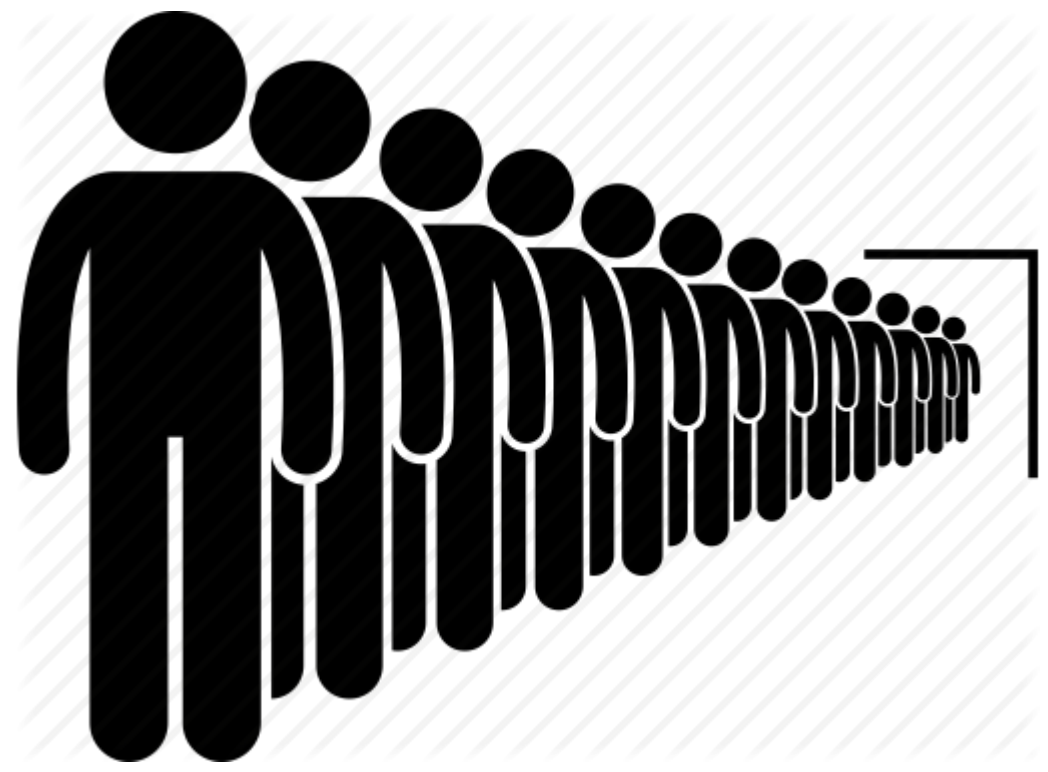
Can you match the equivalent logic circuits?



What does i do in this code?

```
private static void ReceiveMorseCode(int[] Dash, char[] Letter, int[] Dot)
{
    string PlainText = EMPTYSTRING;
    string MorseCodeString = EMPTYSTRING;
    string Transmission = EMPTYSTRING;
    string CodedLetter = EMPTYSTRING;
    char PlainTextLetter = SPACE;
    Transmission = GetTransmission();
    int LastChar = Transmission.Length - 1;
    int i = 0;
    while (i < LastChar)
    {
        CodedLetter = GetNextLetter(ref i, Transmission);
        MorseCodeString = MorseCodeString + SPACE + CodedLetter;
        PlainTextLetter = Decode(CodedLetter, Dash, Letter, Dot);
        PlainText = PlainText + PlainTextLetter;
    }
    Console.WriteLine(MorseCodeString);
    Console.WriteLine(PlainText);
}
```

What is the difference between a Stack and a Queue?



A team of programmers develop software to control a fleet of driverless cars, providing a taxi service for clients in a large city. What Legal and Ethical issues might the programmers face should the public use this service?



If you can answer these
questions....

...or even if the answers to these questions
fascinate you...

...Then A-Level Computer Science is for
you!

What skills do I need?

- The ability to break problems down and solve them in a systematic way is an important skill in many subject, and in real life, for when you are presented with challenges
- This skill is invaluable in many careers in the field of Computer Science, from Software Design & Development and Database Administration to Project and Team Management
- With the still increasing presence of computing in the day to day world, even if you don't pursue a career in computing you will probably work with someone who has and it is useful to know what those people are talking about!

The A level – 2 year course

Paper 1 – Skeleton Program (40%)

150 Minute Exam – Summer 2023

Paper 2 – Theory of Computing (40%)

150 Minute Exam – Summer 2023

Coursework – Personal Project (20%)

Paper 1 – Skeleton Program

- You will study:
 - Problem Solving
 - Object Oriented Programming
 - Regular Languages
 - Vectors
 - Data Structures
 - Algorithms
 - Analysis and Modification of Existing Programs
- You will take this exam on a computer and will need to write, modify and test code as well as answer questions on adjacent topics.

Paper 2 – Theory of Computing

- You will study:
 - Computer Architecture
 - Logic Circuits & Boolean Algebra
 - Functional Programming
 - Legal and Ethical Issues
 - Networks
 - The Internet
 - Databases
 - Big Data
- You will take this exam on paper and will need to answer questions on the above topics.

Coursework – Personal Project

- Program something of interest to you.
- In recent years we've had:
 - Video Games
 - Machine Learning
 - Procedurally Generated Landscapes
 - Satellite Simulators
 - Mobile Apps
 - Tools for other hobbies

What do we expect from you?

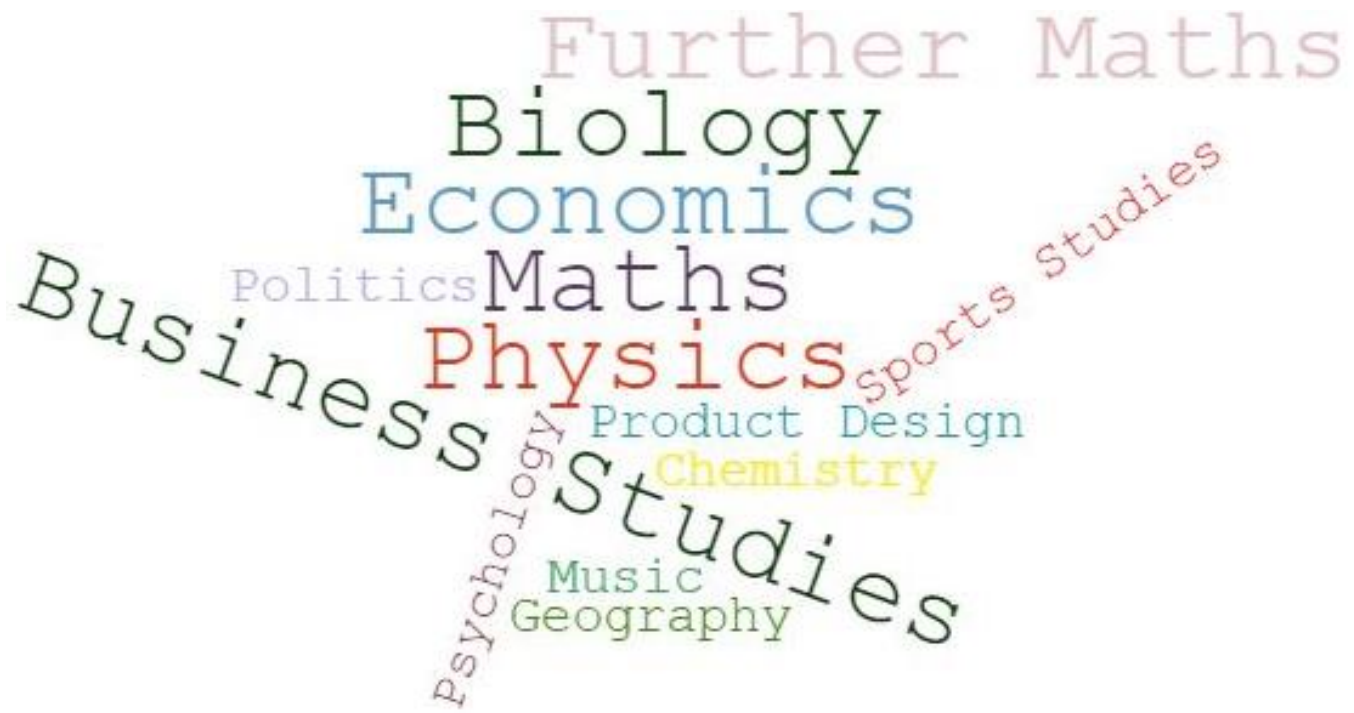
- As with any A Level, you will need to show commitment and a strong willingness to work hard. Aside from that, you will need to have
 - a logical and analytical mind
 - the ability to meet deadlines
 - an interest in how computers work
 - a desire to make computers do what you want

Computer Science is a strong academic subject that will help you in any academic setting or with any career that requires an academic background. More specifically Computer Science has strong ties to:

- Aeronautical Engineering
- Biochemistry
- Biology
- Chemical Engineering
- Economics
- Chemistry
- Civil Engineering
- Electrical Engineering
- Geology
- Mechanical Engineering
- Materials Science
- Physics
- Pharmacy
- Psychology

Combinations...

Computer Science complements many other subjects at A Level. Our current Computer Science students are also studying



Typical Extra Curricular Opportunities

- Visit Bletchley Park – See where it all began with a visit to Bletchley Park
- Mission Space Lab – Conduct an experiment aboard the International Space Station
- The British Informatics Olympiad – Pit your Computer Science skills against other computer science students across all of Britain in this prestigious event.
- RU Hacking – We keep our eyes open for Hackathons, programming events, run by the University of Reading
- Computer Science in Action – See what the experts in computer science are working on

BLETCHLEY PARK



**British
Informatics
Olympiad**



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Computer Science
in ACTION

What next?

- Fill in the application form and we will look forward to seeing you in September!