

**FURZE  
PLATT**  
SENIOR SCHOOL



# A- LEVEL COMPUTER SCIENCE

AMBITIOUS

COLLABORATIVE

HAPPY

INTEGRITY

ENDURANCE

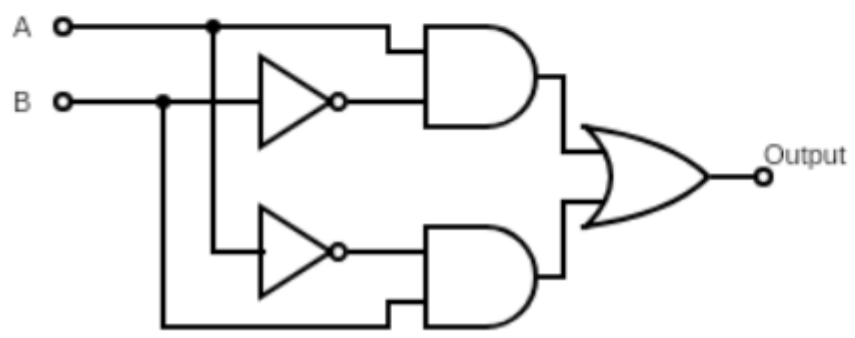
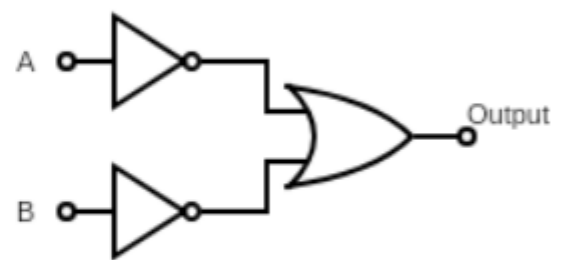
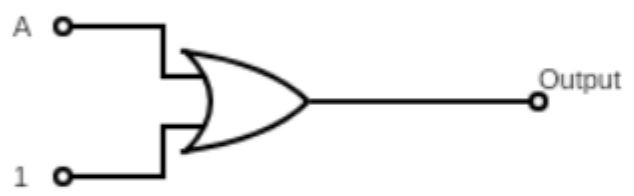
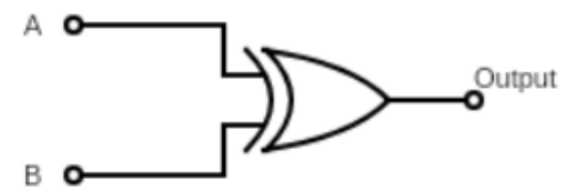
VERSATILITY

EXCELLENCE

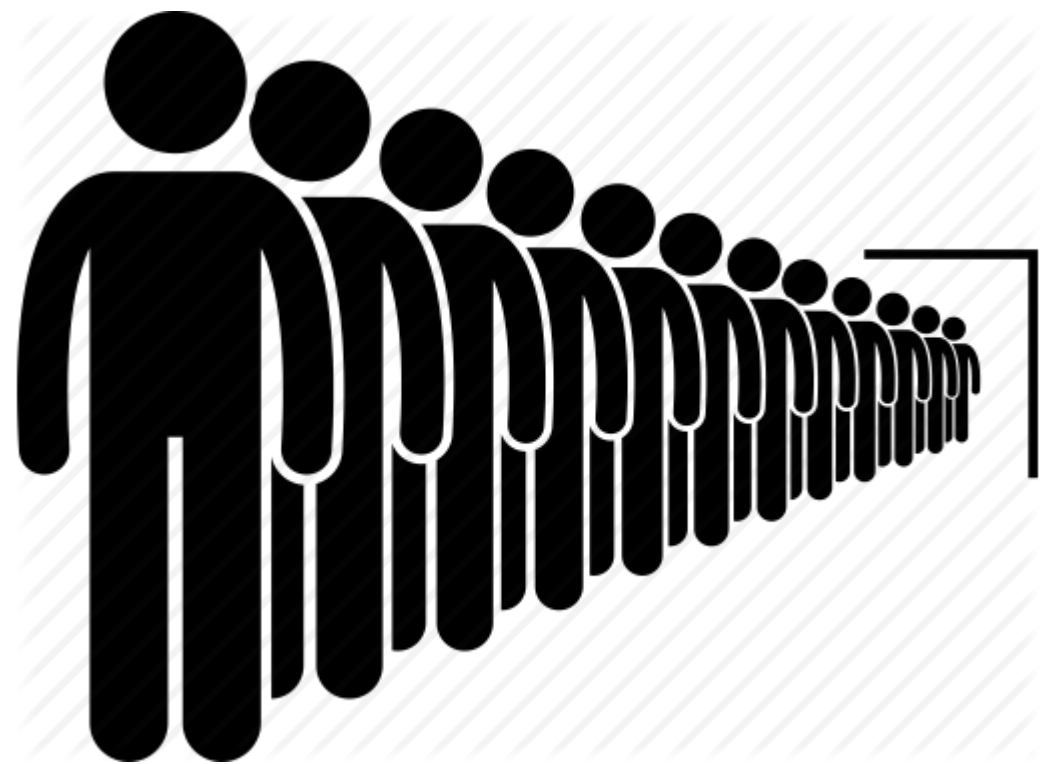
# Could you convert this pseudocode into actual code?

```
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 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?



# So what's the point?

- 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 AQA A-level – 2year course

**Paper 1 – Skeleton Program on-screen (40%)**

**2hrs 30mins Exam – Summer of Year 13**

**Paper 2 – Theory of Computing written (40%)**

**2hrs 30mins Exam – Summer of Year 13**

**Coursework – Independent Personal Project (20%)**

**75 marks**

**Starts Easter of Year 12, finishes Easter of Year 13**

# Time Commitments

There will be 9 hours of contact time (teaching) per fortnight.

You will be expected to commit to at least 5 additional hours per week outside of your timetabled lessons.



# 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

# Where can it take you?

Computer Science is a highly regarded 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

# 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**



**ttp**

*Computer Science*  
**in ACTION**

# Combinations...

Computer Science complements many other subjects at A-Level.

Our current Computer Science students are also studying...

