A Level Computer Science

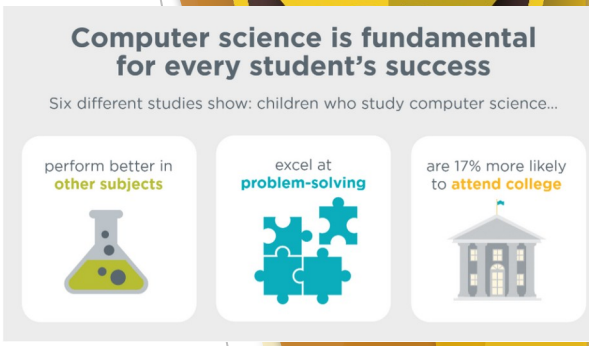
OCR H446

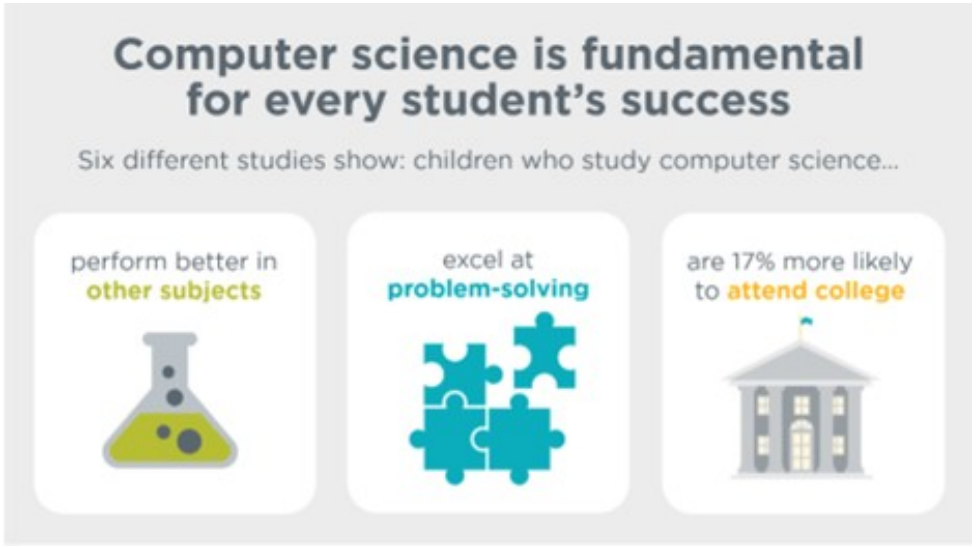
What is A Level Computer Science?

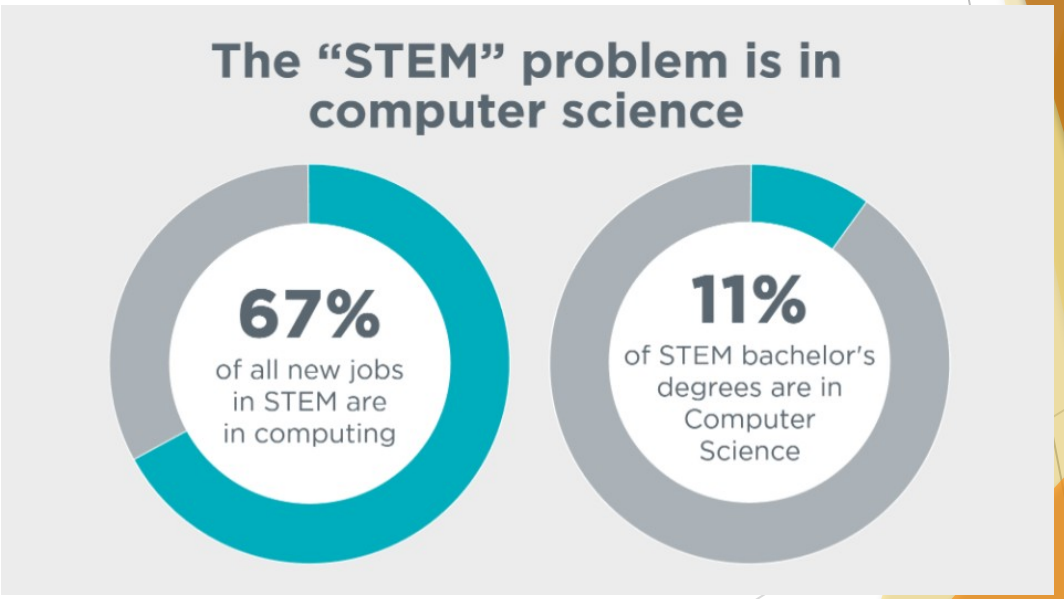
- Computer Science at A Level moves you up a level from GCSE. It is all about:
- Developing an understanding of how computers hardware works.
- Learning about types of Software and their uses.
- Developing your computational thinking skills and problem solving.
- Taking your skills in creating Algorithms to the next level.
- Moving your programming skills forward through your choice of Project.

Why you should study Computer Science?

- It is a highly regarded subject accepted at all universities and colleges.
- The problem solving and thinking skills that you learn will support your other subjects and your future self!
- It is a good mix of practical and theory.
- Offers you access to a range of degrees and Apprenticeships.




Computer science is fundamental for every student's success
Six different studies show: children who study computer science...
perform better in other subjects
excel at problem-solving
are 17% more likely to attend college


The "STEM" problem is in computer science
67%
of all new jobs in STEM are in computing
11%
of STEM bachelor's degrees are in Computer Science

Code.org

Assessment

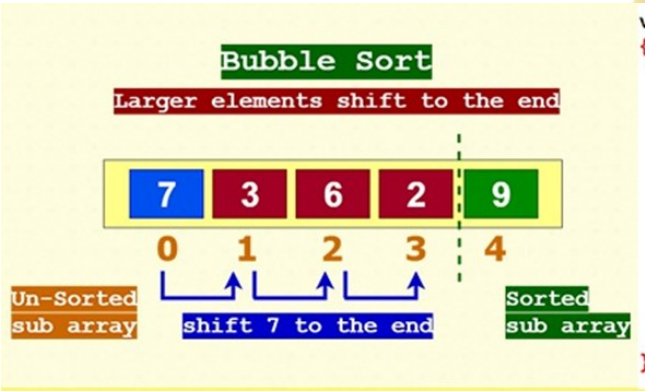
- Unit 1 Computer Systems worth 40%. Examined unit. This covers the theory behind computer systems.
- Unit 2 Algorithms and Programming worth 40%. Examined unit. This unit tests your ability to solve problems and develop algorithms to demonstrate potential solutions.
- Unit 3 Programming Project worth 20%. This is a coursework unit where you choose a project and design, build and evaluate a solution for your chosen scenario.

Unit 1 Computer Systems

- **Hardware** (CPU, Input, Output, and Storage Devices)
- **Software** (Systems Software, Application Generation, Software Development and Types of Programming Languages)
- **Exchanging Data** (Networks, Compression, Encryption, Databases, Web Technologies)
- **Data** (Data types, Data Structures, and Boolean Algebra
- **Legal, Moral and Ethical Issues** (computer related laws, wider ethical issues of computer usage)

Unit 2 Algorithms & Programming

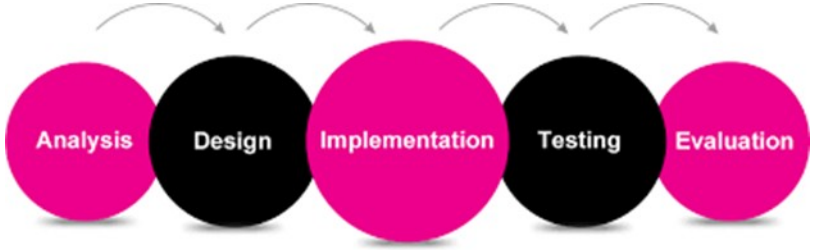
- Computational Thinking (Ahead, Logically, Abstractly, Procedurally, Concurrently)
- Problem Solving and Programming (Programming techniques, Computational Methods)
- Algorithms (Big O Notation, Trees, Queues, Linked Lists and how to read and write complex algorithms)




```
void bubbleSort(int a[])
{
   for(int i=0; i<5;i++)
   {
      for(int j=0; j<(5-i-1); j++)
      {
         if(a[j]>a[j+1])
         {
            int temp = a[j];
            a[j] = a[j+1];
            a[j+1] = temp;
         }
      }
   }
}
```

Unit 3 Programming Project

- Analysis (research skills)
- Design (uses Decomposition and Algorithm skills)
- Develop (uses Programming Skills and Iterative testing)
- Evaluation



Past Projects Include

- Stock Inventory systems
- Recipe Application
- 2D games
- Subject Quizzes
- Booking Systems
- Baby Monitoring system
- Book referral system

Where Can Computer Science take you?

- Past students have gone on to:
  - University degrees in: Computer Science, Networking, Cyber Security, Game Design,
- Apprenticeships at :
  - PWC
  - CapGemini
  - Local Software Development companies
  - Rolls Royce
  - Land Rover Jaguar

Any Questions?

- Please don't be afraid to ask!

- Course contact:
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