

Computer Science & iMedia @ SPH

'Becoming the people God calls us to be'



St Philip Howard
SIXTH FORM

Meeting the Team



Mrs Lentz-Horne

Head of Department

BA (Hons) KS2 KS3 Education
Computer Science



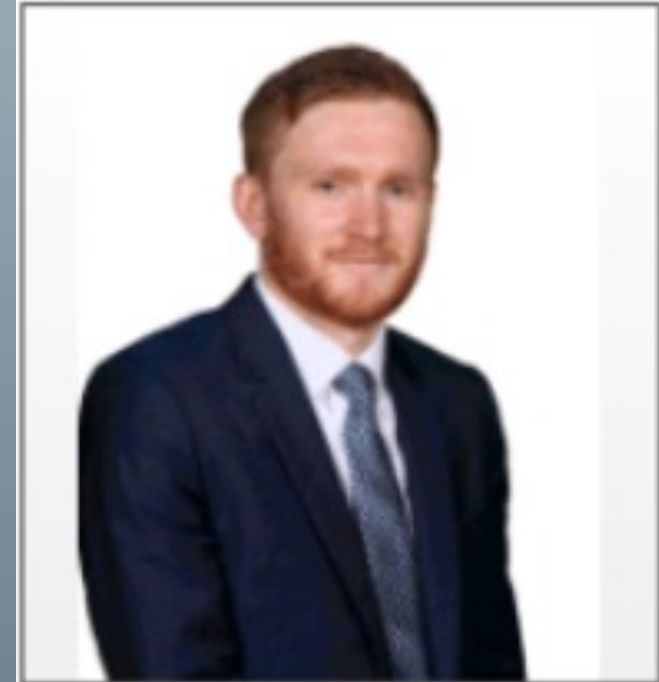
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Mr Rose

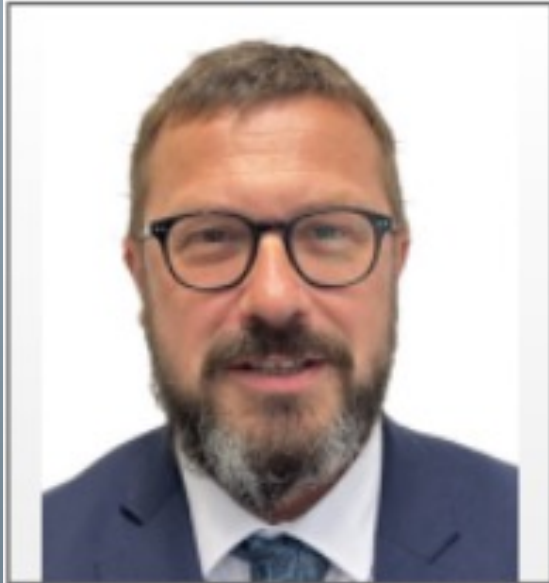
A Level Lead & Computer
Science Teacher

BA



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Meeting the Team



Mr Challinor

Computer Science Teacher
and Creative iMedia
Moderator

BA



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The Big Picture

The modern world needs Computer Scientists



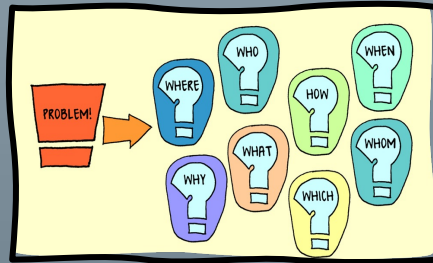
Excellent graduate prospects



Make a positive difference in the world



Excellent problem solving skills



Encourages creativity and innovation



Needed in almost every industry



Help solve big issues



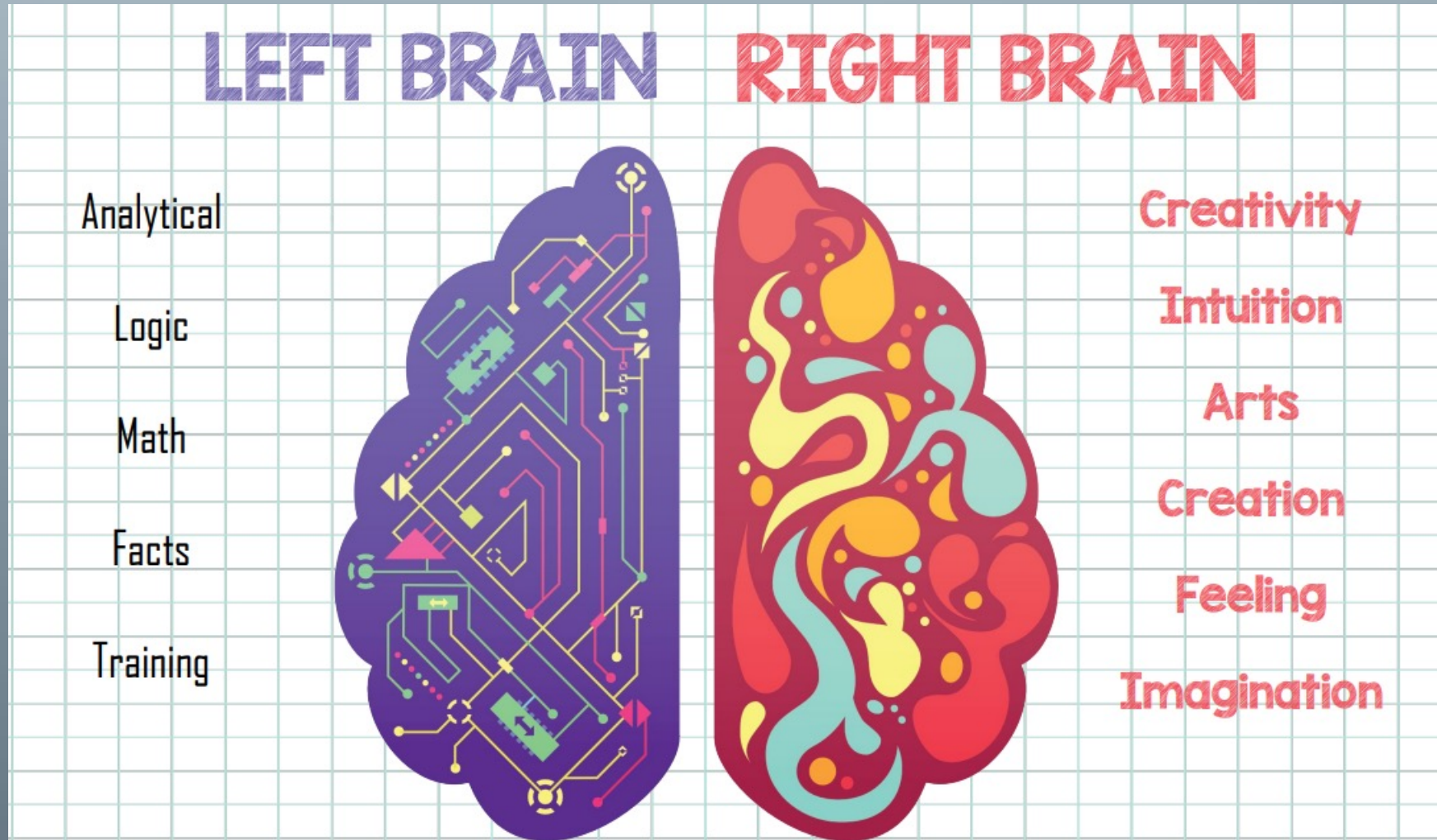
Good starting salaries



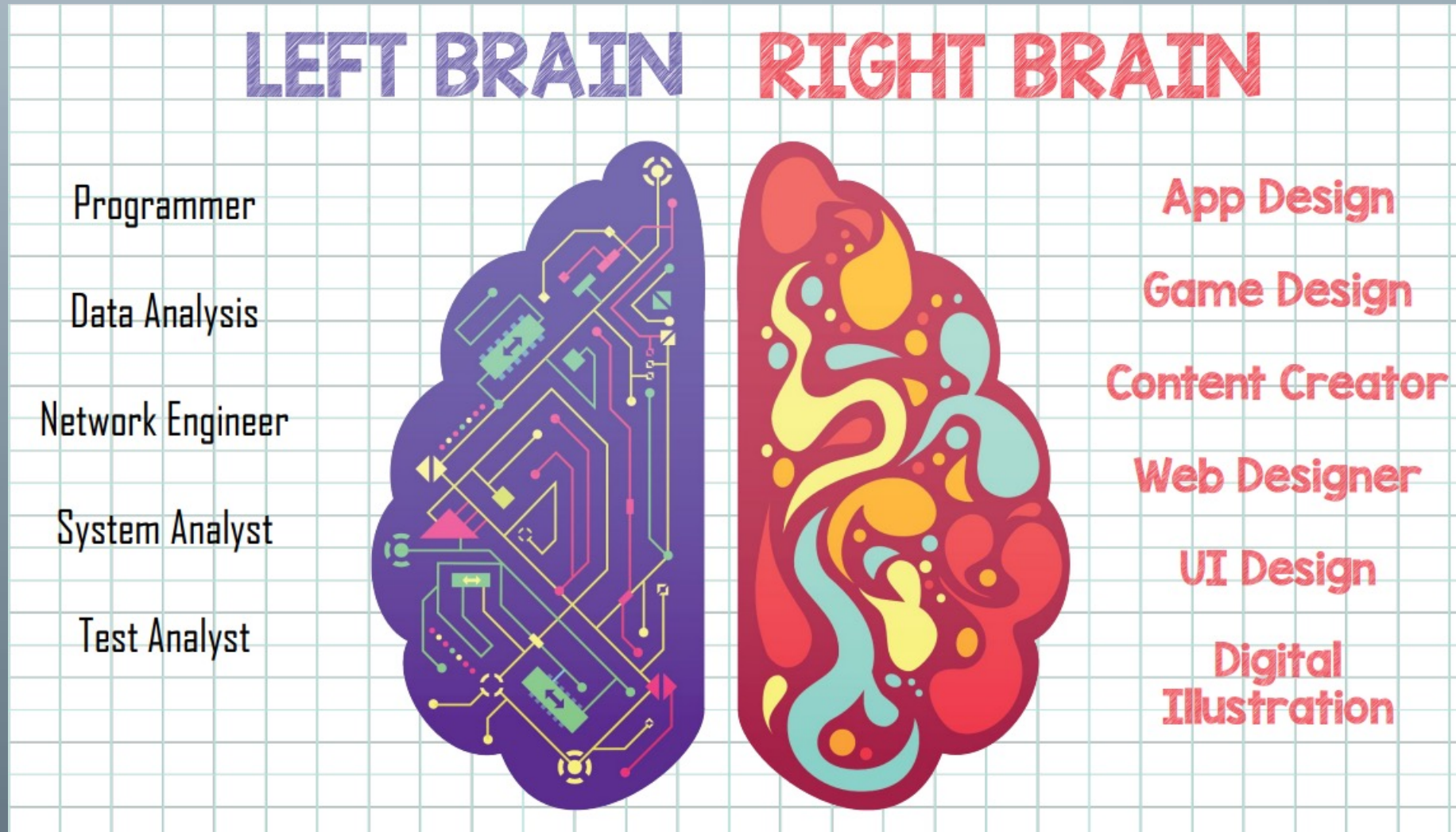
Collaborative and individual working



Computer Science vs Creative iMedia



Computer Science vs Creative iMedia



Computer Science GCSE Course

- Edexcel exam specification
- Two exams which will be taken at the end of the 2-year course
- Paper 1 – Paper Based
- Paper 2 – Computer programming exam.

Please check the examination details below before entering your candidate information

Candidate surname

Centre Number

Candidate Number

Other names

Pearson Edexcel Level 1/Level 2 GCSE (9-1)

Friday 19 May 2023

Afternoon (Time: 1 hour 30 minutes)

Computer Science

Paper reference **1CP2/01**

PAPER 1: Principles of Computer Science

You do not need any other materials.

Total Marks

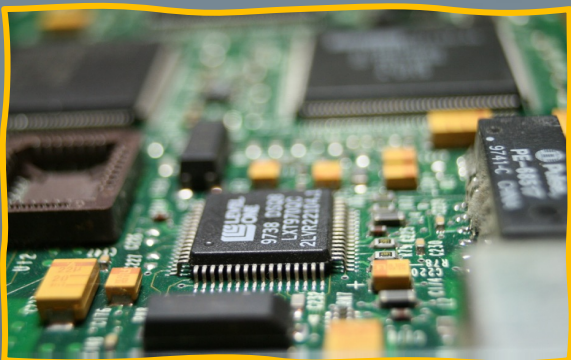
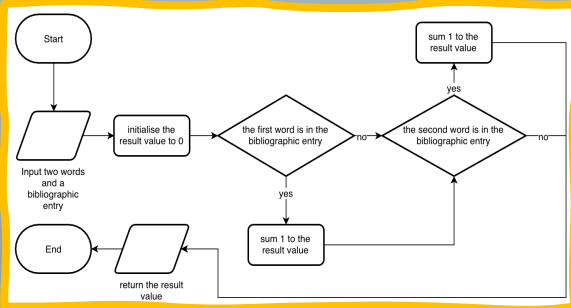


Paper 1: Principles of Computer Science (1hr30, 50%)

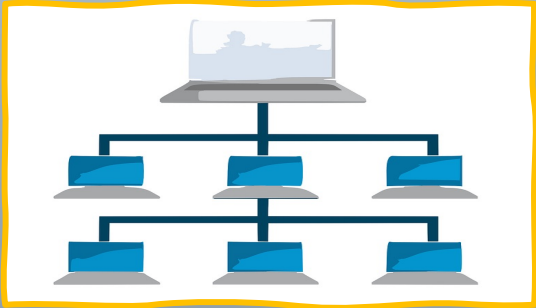
Topic 1: Computational Thinking- understanding of what algorithms are, what they are used for and how they work; ability to follow, amend and write algorithms; ability to construct truth tables.

Topic 2: Data– understanding of binary, data representation, data storage and compression.

Topic 3: Computers – understanding of hardware and software components of computer systems and characteristics of programming languages.



Paper 1: Principles of Computer Science (1hr30, 50%)



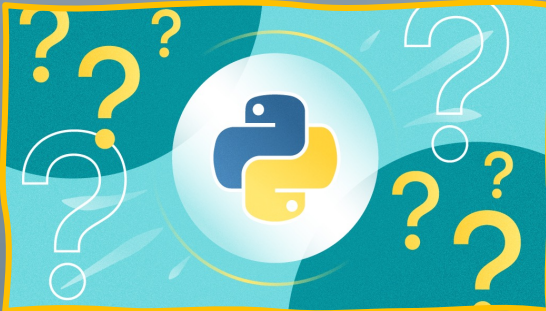
Topic 4: Networks – understanding of computer networks and network security.



Topic 5: Issues and Impact – awareness of emerging trends in computing technologies, and the impact of computing on individuals, society and the environment including ethical, legal and ownership issues.



Paper 2 : Application of Computational Thinking (2hrs, 50%)



```
Mode New Load Save Run Debug REPL Pester Zoom-in Zoom-out Theme Check Help Out
debug_example.py X
1 # Write your code here :-
2
3 def add(x, y):
4     """
5     Returns the result of adding x to y.
6     """
7     return x + y
8
9 values = [
10 (1, 2),
11 (2, 3),
12 (3, 4),
13 ]
14
15 for x, y in values:
16     print(add(x, y))
```

The main focus of this paper is:

- Understanding what algorithms are, what they are used for and how they work in relation to creating programs.
- Understanding how to decompose and analyse problems.
- Ability to read, write, refine and evaluate programs.



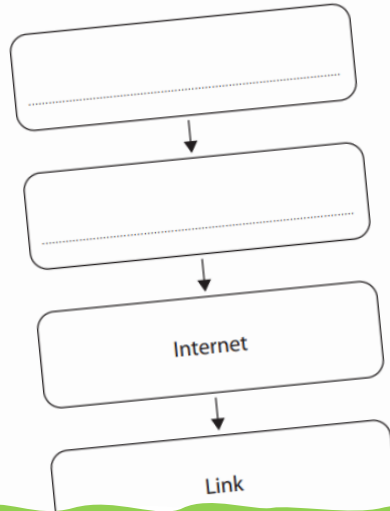
What are the exams like?

- Two exams, one paper based and one programming exam on the computer.
- Mainly short questions with some extended questions.
- Paper two has six programming questions with a mixture of rearranging, adding to, debugging and creating code.



What are the exams like?

(a) Complete the diagram of the 4-layer TCP/IP model. (2)

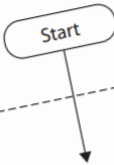


(c) Identify the feature of an optical disc that allows data to be read.

- A It is magnetic
- B It is portable
- C It is reflective
- D It is volatile

(d) Define the term 'embedded system'.

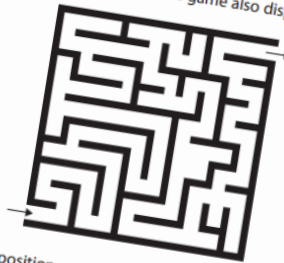
Complete the flowchart to show the algorithm.
You may not need to use all the flowchart symbols.



e) Algorithms control physical devices using logical operators.
A security system turns on a floodlight when the sunlight falls below a certain level (S) and a movement sensor is activated (M).
Complete the truth table. (2)

S	M	S AND M

(f) A group of students are working together on a single maze game. The arrow keys control the character. When the character reaches the end of the maze without touching a wall, a happy sound is played. The game also displays a score.



Discuss the use of decomposition and abstraction in developing this game.
Your answer should include:

- a definition of each term
- the benefits each brings to the group of students
- an example of where each could appear in the program code.



What are the exams like?

```
Q01.py
# Constants
OUTPUT_FILE = "Q05_OUTPUT.TXT"
MAX_PER_LINE = 7

# Global variables
weightsused = [3.79, 4.16, 1.52, 3.66, 2.58, 4.98, 4.37, 2.95, 2.58,
4.37, 4.59, 2.61, 6.13, 4.49, 1.66, 2.65, 4.64, 4.72,
3.59, 4.56, 4.23, 2.15, 4.03, 2.47, 4.61, 4.55, 6.31,
5.81, 2.63, 2.23, 2.34, 4.49, 3.02, 3.86, 6.25, 2.07,
1.79, 2.62, 5.52, 6.38, 3.77, 1.74, 1.78, 3.52, 3.87, 3.45,
3.89, 3.48, 1.87, 2.12, 2.09, 2.84, 2.29, 4.46, 3.65]

# =====> write your code here

# Main program
```

5 A program is required to determine if a user can access a database. The names and passwords of users are stored in a two-dimensional array.

Open file **Q06.py**

Write a program to meet these requirements.

Inputs

- Prompt for and accept a user name and a password
 - neither should be blank

Process

- Implement authentication by searching the array for the user's name and password
 - ensure the search works for any length of array

Output

- Display a suitable message when the correct combination of name and password is found
- Display a suitable message when the user's name is found but the password does not match

```
Q01.py
# Global variables
decimalCode = 60

# =====> Add a line to create an integer variable named 'num' and
# set it to 0

# Main program
# =====> Complete the line to take the input from the user and
# convert it to an integer
num =

# =====> Complete the if statement to check that the inputted number
# is between 5 and 30.
```

Open file **Q01.py**

Amend the lines at the bottom of the code to give the:

- name of a constant used in the program
- name of an array used in the program
- line number of an initialisation of a variable with a real number
- line numbers for a selection construct
- line numbers for a repetition construct
- line numbers for an iteration construct
- line number for an instruction that outputs information to the screen.

Do **not** add any additional functionality.

Save your amended code file as **Q01FINISHED.py**

Cambridge Creative iMedia



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How is the course assessed?



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Beyond GCSE

Computing and Digital Media Department

Any Questions?



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