



# The Computing Department

St Olave's Grammar School

## Remote Learning Protocol for Students

School Closure Due to COVID19

Starting: 23rd March 2020-----until further notice

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## TOP TIPS for remote learning

### GET ORGANISED

*The desire for order is the only order in the world. Georges Duhamel*

You need to ensure you look after yourself and stay organised while planning to do distance learning. Alan Turing's picture hasn't been chosen for banknote £50 by chance. You need to get self-organised to get the most out of your time at home.

- Start Early- Aim to complete the set work for the day
- Follow a timetable -use the timetable template included below-page3
- Visit Moodle regularly to access work, complete it by the set deadline and submit it based according to the instructions given by your class teacher. Most likely you will be submitting the work on weekly basis using one of the following means
  - Class notebook
  - Teams
  - other websites like diagnostics questions, Isaac Computer science, dynamic learning
  - Office 365 forms
  - Moodle

### SET THE MOOD

- Find some place where you can work at your best and won't get distracted by others
- Have a comfortable place to sit, glass of water, plenty of space if possible and light
- Stay away from social networking sites, video games and other external influences
- Don't forget to take breaks in between work- use timetable template attached to plan/record your weekly learning of computer science.

### BE PERSISTENT

*I never took a day off in my twenties. Not one* Bill Gates

- Be persistent by sticking with difficulty, daring to be different and tolerating uncertainty.
- Aim to complete all the given work. If you get stuck, you can seek help in the following methods
  - Contact class teacher via Teams or school email
  - Contact your classmates they might have an answer to your query
  - Use online resources on Moodle to help you
- Over the next few weeks, you should aim to try some of the following methods as part of revision for Computer science
  - Mind mapping
  - Practice programming at least once a week if not more
  - Summarise key points you have learnt on a revision cards or exercise book
  - Explain work to a parent/carer/sibling
  - Get someone to test you



## Remote Learning for KS3- Year 7

<b>YEAR 7</b>	<p><b>Computing work to complete during school closure</b></p> <p>Year 7, below is a brief outline of work you need to complete during the next few weeks. To receive lesson resources and for submission of work, please follow instructions received from your class teacher via Moodle, teams and school email.</p>
Week1	<p>Understand how data of various types (including text and pictures) can be represented and manipulated digitally in the form of binary digits. Know what a pixel is and how many bytes are stored per pixel.</p>
Week 2	<p>How sound can be represented digitally in the form of 0's and 1's. Sound is an analogue signal and it must be converted into digital form for storing in a computer. How sound can be sampled and effect of sample rate on the quality of sound and size of the sound file.</p> <p><b>Extension:</b> Understand what compression and types of compressions are. Describe the difference between lossy and lossless compression</p>
	<p><b>Easter Break</b></p>
Week 3	<p>Understand why sequencing in not always useful and selection is required.</p>
Week 4	<p>Draw flowchart for a programme which ask user to enter their marks and print their grade using if, elif and else selection statements. e.g A if marks greater than 80 B if marks greater than 60 C marks greater than 40</p>
Week 5	<p>Use the selection constructs of Python. If, elif and else. Write a simple program using if, else and elif statements in Python programming. Write a program which ask user to enter their marks and print their grade using if, elif and else in Python.</p>
Week 6	<p>Computing Research Project -Summer term</p>
Week 7	<p>Computing Research Project- Summer term</p>

## Remote Learning for KS3- Year 8

<b>YEAR 8</b>	<b>Computing work to complete during school closure</b>  Year 8, below is a brief outline of work you need to complete during the next few weeks. To receive lesson resources and for submission of work, please follow instructions received from your class teacher via Moodle, teams and school email.
Week1	Common file types and file extension Two ways of managing files using the GUI and Command line interface. Understand the importance of naming and organising files and folders. Understand file has two parts (the name and extension). Understand that file name should be what it is about, and file extension tells us what kind of file it is. Understand what a command line and directory is.
Week 2	Tasks to complete on Dynamic learning website <ul style="list-style-type: none"> <li>• Command line</li> <li>• what are sorting algorithms (Bubble sort and Selection sort)</li> </ul>
	<b>Easter Break</b>
Week 3	Abstraction: To program a robot that can navigate around a maze by itself. Use decomposition: Be able to use selection statements to make decisions. Use computational abstraction to model the behaviour of real -world problems and physical systems
Week 4	Programming selection to Make Decision Use Boolean operators to make more sophisticated conditions for selection
Week 5	Venn Diagrams Laws of Robotics
Week 6	Computing Research Project -Summer term
Week 7	Computing Research Project- Summer term

## Remote Learning for KS4 – Year 9

<b>YEAR 9</b>	<p><b>Computing work to complete during school closure</b></p> <p>Year 9, below is a brief outline of work you need to complete during the next few weeks. To receive lesson resources and for submission of work, please follow instructions received from your class teacher via teams and school emails. Please visit <a href="#">GCSE Yr9 Computer Science Moodle page</a> to seek further help and guidance from online textbooks, videos, PowerPoint presentations and notes. Your work submission will mostly be via class notebook or teams. You will be completing an IPM on Networks via Office 365 form before Easter.</p>
Week1	<p><b>Data Structures</b></p> <p>Concept of data structures such as lists. Be able to explain what a list is and how to declare one. Use lists in Python. Know index of a list starts with 0. Methods available to use with lists. String manipulation / more on for loop / type cast...</p>
Week 2	<p><b>Algorithms</b></p> <p>Understand what a selection sort and bubble sort is Draw flowchart and pseudocode for selection sort and bubble sort algorithms. Code it in Python with teacher support. Write bubble sort and selection sort algorithms in Python. Use def to define a function and call it in main (). <b>IPM on Networks- Via Office 365 Forms</b></p>
	<p><b>Easter Break</b></p>
Week 3	<p><b>Recursion.</b></p> <p>Know how to call a function within a function. Write a recursive program to find factorial of a given number. Understand what Fibonacci series and golden ratio is. Write a function in python which takes a number as input and print the number or terms of the Fibonacci series.</p>
Week 4	<p><b>Database</b></p> <p>Understand what a database is. Understand that data in a program will only be available when it's running and is not persistent. Understand what data integrity is including validation and verification of data Be able to describe a database as a persistent organised store of data including various models of data.</p>
Week 5	<p><b>Relational Database:</b></p> <p>Know what relational database is is. Be able define what is entity, table, filed, attribute, primary key, foreign key etc Organise data about Elgar's friend in a table from the given Biographies. Select suitable field names and table name. Create a single table for the Elgar's friend data</p>
Week 6	<p>Understand the important to only store data that is needed and relevant. Decide the Data Types and field name for <b>Elgar's friend database</b>. Explain the advantages of having a relational database. Understand why redundancy can cause problems and how to avoid it using relational database. Understand what Primary Keys, Foreign Keys and relationship are between various entities are.</p>

	Find the subject of variation XIII of Edward Elgar's Enigma Variations using the given clues and pigpen cipher. Understand how to query database and be able to write database queries.
Week 7	Familiarise yourself with <b>SQL</b> (structured query language) and keywords used to query a data such as CREATE, SELECT, UPDATE, DELETE, INSERT

### Year 9 weblinks to develop programming skills

Basic Python tutorials	<a href="http://www.learnpython.org">www.learnpython.org</a>
Python 2 (very similar to 3) daily practice	<a href="https://www.codecademy.com/learn/learn-python">https://www.codecademy.com/learn/learn-python</a>
Python tutorials and syntax support	<a href="https://www.w3schools.com/python/">https://www.w3schools.com/python/</a>
Python Dictionary by Nicola Wilkin	<a href="http://computingattallis.weebly.com/uploads/2/6/4/3/26435494/python_dictionary.pdf">http://computingattallis.weebly.com/uploads/2/6/4/3/26435494/python_dictionary.pdf</a>
OCR Programming challenges	<a href="https://www.ocr.org.uk/Images/202838-20-code-challenges.pdf">https://www.ocr.org.uk/Images/202838-20-code-challenges.pdf</a>
Fun free Python basics	<a href="https://www.datacamp.com/courses/intro-to-python-for-data-science">https://www.datacamp.com/courses/intro-to-python-for-data-science</a>
Udacity free Python course	<a href="https://www.udacity.com/course/introduction-to-python--ud1110">https://www.udacity.com/course/introduction-to-python--ud1110</a>
Coursera- Free Courses on Python	<a href="https://www.coursera.org/learn/interactive-python-1">https://www.coursera.org/learn/interactive-python-1</a>
SQL Zoo	<a href="https://sqlzoo.net/">https://sqlzoo.net/</a>

## Remote Learning for KS4- Year 10

<b>YEAR 10</b>	<b>Computing work to complete during school closure</b>  Year 10, below is a brief outline of work you need to complete during the next few weeks. To receive lesson resources and for submission of work, please follow instructions received from your class teacher via teams or school emails. Please visit GCSE <a href="#">Yr10 Computer Science Moodle page</a> to seek further help and guidance from online textbooks, videos, PowerPoint presentations and shared notes. Your work submission will mostly be via <b>class notebook or teams</b> . You need to invest enough time during this break to develop your Python Programming skills. You will also complete a small <b>computing project</b> in the month of April.
Week1	Be able to use SQL to query and search the given data base. Know and be able to use the command words like SELECT, FROM, WHERE, LIKE, *, Ampersand %, ORDER etc correctly. Practical programming practise time to use SQL database in python
Week 2	Applying computing related mathematics (+, -, /, *)  Exponentiation (^ or **), MOD % and DIV //  <b>Programming Project</b> Introduction and Analysis writeup
	<b>Easter Break</b>
Week 3	<b>Programming Project</b> – Design and Development Develop a Python programming solution to a given problem Starting with designing algorithms using flowchart and Pseudocode
Week 4	<b>Programming project-</b> Development in Python Interpret correct and complete algorithms. Identify ways to refine code and correct mistakes
Week 5	<b>Producing Robust Programs</b> Defensive design considerations such as (input sanitisation/validation planning for contingencies and anticipating misuse by <ul style="list-style-type: none"> <li>• authentication, maintainability, comments and indentation</li> <li>• purpose of testing, types of testing: iterative and final/terminal testing</li> <li>• Identify syntax and logic errors</li> <li>• selecting and using suitable test data.</li> </ul>
Week 6	Ethical, Legal, Cultural and environmental concerns
Week 7	Translators and facilities of languages <ul style="list-style-type: none"> <li>• characteristics and purpose of different levels of programming language, including low level languages</li> <li>• the purpose of translators</li> <li>• the characteristics of an assembler, a compiler and an interpreter</li> <li>• common tools and facilities available in an integrated development environment (IDE):</li> </ul>



## Remote Learning for KS4- Yr11

<b>YEAR 11</b>	<p><b>Computing work to complete during school closure</b></p> <p>Year 11, Below is an outline of the revision plan you need to carry out during the next few weeks. Most resources are available on Computer Science <a href="#">CS Yr11 Moodle page</a>. You can refer to the chapters indicated below for each topic using the PGOOnline Computer Science book an electronic copy is available on Moodle. Please ensure you check <b>teams</b> regularly to receive and submit your work. You must complete the CGP workbook pages which are relevant to the topics you will be revising each week.</p>
Week1	<p>Complete SET B practice Papers you received in school. Mark scheme is available on Moodle</p> <p>Computer Systems in Modern world – Chapter 4 a) Ethical and Cultural Issues- Chapter 4 b) Complete CGP workbook section 3 pages 30 to 39</p>
Week 2	<p>System Architecture, Memory and Storage Role of various registers in Fetch Decode and execute cycle – Chapter 1</p>
	<p><b>Easter Break</b></p>
Week 3	<p>Algorithms Chapter 5 and 5b Zig Zag Practice paper 3 – Submit the answer booklet paper3 via teams Complete CGP workbook pages 40 to 48</p>
Week 4	<p>Programming Concepts – Chapter 6 a Arrays and 2D arrays– Chapter 6 b Functions and procedures– Chapter 6 c Complete CGP workbook pages 52 to 65</p>
Week 5	<p>System and Software Security Chapter 3</p>
Week 6	<p>Wired and wireless Networks – Chapter 2</p> <p>Complete CGP workbook pages 24 to 29</p>
Week 7	<p>Zig Zag Practice paper 4 – Submit the answer booklet Paper4 via teams</p>

## Remote Learning for KS5- Year 12

<p><b>YEAR 12</b></p>	<p><b>Computing work to complete during school closure</b></p> <p>Year 12, Below is an outline of the Computing work you need to complete during the next few weeks. Most resources are available on <b>Year 12 Class notebook under contents library</b>. There are additional exam practice questions, online textbook available on <a href="#">AS Computer science Yr12 Moodle page</a>. You can refer to the chapters indicated below for each topic using the PGOnline OCR AS and A level Computer Science book. Please regularly check <b>teams</b> to receive work and complete all set <b>assignment on teams</b>.</p>
<p>Week1</p>	<p>Censorship and the Internet. Chapter 46</p> <ul style="list-style-type: none"> <li>• Monitor behaviour.</li> <li>• Analyse personal information.</li> <li>• Piracy and offensive communications.</li> <li>• Layout, colour paradigms and character sets.</li> </ul>
<p>Week 2</p>	<p>Use of an IDE to develop/debug a program. Chapter 57</p>
	<p><b>Easter Break</b></p>
<p>Week 3</p>	<p>A2 students Normalisation of floating point numbers – Chapter 31 AS students to complete – Zig Zag practice questions booklet for paper1 + paper2</p>
<p>Week 4</p>	<p>Revision on Algorithms</p> <ul style="list-style-type: none"> <li>• Implement bubble sort, insertion sort.</li> <li>• Implement binary and linear search.</li> <li>• Representing, adding data to and removing data from queues and stacks</li> </ul> <p>Flask SQLAlchemy for web applications – A2 Students</p>
<p>Week 5</p>	<p>Software Development</p> <ul style="list-style-type: none"> <li>• Different test strategies, including black and white box testing and alpha and beta testing.</li> <li>• Test programs that solve problems using suitable test data and end user feedback, justify a test strategy for a given situation.</li> </ul> <p><b>Analysis Phase of NEA:</b> (A2 students to start the Computing project) Project Analysis phase WEEK 1</p>
<p>Week 6</p>	<p>Review - Subroutine and recursion</p> <ul style="list-style-type: none"> <li>• (b) Recursion, how it can be used and compares to an iterative approach.</li> <li>• (d) Modularity, functions and procedures, parameter passing by value and by reference.</li> </ul> <p><b>Analysis Phase of NEA:</b> (A2 students to continue with their computing project) A2 students WEEK 2</p>
<p>Week 7</p>	<p><b>Design Phase of NEA: Week 1</b></p> <p>User interface design - How user will interact with your program Program flow design - How your program will work. Design a flow diagram.</p>

## Remote Learning for KS5- Year 13

<p><b>YEAR 13</b></p>	<p><b>Computing work to complete during school closure</b></p> <p>Year 13, Below is an outline of the Computing work you need to complete during the next few weeks. Most resources are available on <b>Year 13 Class notebook under contents library</b>. There are additional exam practice questions, online textbook available on <a href="#">AS Computer science Yr13 Moodle page</a>. There is a separate page for paper 1 and paper 2. You can refer to the chapters indicated below for each topic using the PGOonline OCR AS and A level Computer Science book. Please regularly check <b>teams</b> to receive work and complete all set <b>assignment on teams</b>.</p>
<p>Week1</p>	<p><b>23<sup>rd</sup> of March Deadline for Computing A Level Project</b>- Make sure you have uploaded the most recent version on one drive. Email Mrs Zeshan once it's done.</p> <p>Component 1 Revision Software development + structure and function of processor</p> <p>Component 2 Revision Revision Computational thinking and Algorithms- (Zigzag resources Exercises 1,2 and 3)- Passcode to resource is ZZ2ghC4</p>
<p>Week 2</p>	<p>Component 1 Revision Revision on Databases + Networks</p> <p>Component 1 revision Application generation and types of programming languages Compression + encryption and hashing Zigzag resources Exercises 4,5 and 6)- Passcode to resource is ZZ2ghC4</p>
	<p><b>Easter Break</b></p>
<p>Week 3</p>	<p><b>Dijkstra Shortest Path</b>- Zigzag resources Exercise 7</p> <p>Practice Papers on Computer systems - Paper 1 Paper A and Paper B+ mark scheme available on Moodle</p>
<p>Week 4</p>	<p><b>Bomb Search</b> - Zigzag resource Exercises 8</p> <p>Practice Papers on Algorithms and Programming Paper A and Paper B + mark scheme available on Moodle</p>
<p>Week 5</p>	<p><b>Dictionaries and Hash Tables</b>- Zigzag resources Exercises 9</p> <p>Revision paper 1 and paper 2 -OCR specimen papers</p>

