

Subject: Computing

Year: 9

<u>Topic 1</u> <u>Python</u> <u>Programming II</u>	<u>Topic 2</u> <u>3D</u> <u>Animation</u>	<u>Topic 3</u> <u>Data Science</u>	<u>Topic 4</u> <u>Representations</u>	<u>Topic 5</u> <u>Cyber Security II</u>	
<ul style="list-style-type: none">• Use slicing and concatenation to manipulate strings.• Identify the output of a program where string manipulation has been used.• Use string manipulation to generate a username for a registration system.• Know how to write a basic WHILE loop.• Know how to use logical operators such as AND/OR in programming.	<ul style="list-style-type: none">• Add, delete, and move objects• Scale and rotate objects• Use a material to add colour to objects• Add, move, and delete keyframes to make basic animations• Create useful names for objects• Join multiple objects together	<ul style="list-style-type: none">• Define data science• Explain how visualising data can help identify patterns and trends in order to help us gain insights• Use an appropriate software tool to visualise data sets and look for patterns or trends• Evaluate findings to support arguments for or against a prediction• Recognise examples of where large	<ul style="list-style-type: none">• Define key terms such as 'pixels', 'resolution', and 'colour depth'• Describe how an image can be represented as a sequence of bits• Describe how digital images are composed of individual elements• Recall that the colour of each picture element is represented using a sequence of binary digits• Compute the representation size of a digital	<ul style="list-style-type: none">• Critique online services in relation to data privacy• Explain the difference between data and information• Explain the need for the Data Protection Act• Identify what happens to data entered online• Implement strategies to minimise the risk of data being compromised through human error• Recognise how human errors pose security risks to data	

<ul style="list-style-type: none"> • Add a login system to your programming project (Quiz) • Understand the purpose of a subprogram in programming. • Write a subprogram to draw a square. • Create a subprogram for the quiz in your programming project. • Create a 10-question multiple-choice quiz in Python. • Include a working login system before a user can attempt the quiz. • Use the subprogram created to use the quiz again. 	<p>using parenting</p> <ul style="list-style-type: none"> • Play, pause, and move through the animation using the timeline • Apply different colours to different parts of the same model • Use edit mode and extrude • Use loop cut and face editing -Use proportional editing • Use subdivision • Use the knife tool - Add and edit set lighting 	<p>data sets are used in daily life</p> <ul style="list-style-type: none"> • Select criteria and use data set to investigate predictions • Define the terms 'correlation' and 'outliers' in relation to data trends • Identify the steps of the investigative cycle • Solve a problem by implementing steps of the investigative cycle on a data set • Use findings to support a recommendation • Collate data from a data capture form • Identify the data needed to answer a question defined by the learner 	<p>image, by multiplying resolution (number of pixels) with colour depth (number of bits used to represent the colour of individual pixels)</p> <ul style="list-style-type: none"> • Describe how colour can be represented as a mixture of red, green, and blue, with a sequence of bits representing each colour's intensity • Describe the trade-off between representation size and perceived quality for digital images 	<ul style="list-style-type: none"> • Define hacking in the context of cyber security • Explain how a DDoS attack can impact users of online services • Explain the need for the Computer Misuse Act • Identify strategies to reduce the chance of a brute force attack being successful • Examine how different types of malware causes problems for computer systems • List the common malware threats • Question how malicious bots can have an impact on societal issues • Compare security threats against probability and the potential impact to organisations 	
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	<ul style="list-style-type: none"> • Compare different render modes • Set up the camera • Create a 3–10 second animation • Render out the animation 	<ul style="list-style-type: none"> • Identify the steps of the investigative cycle • Apply data cleansing techniques to a data set • Describe the need for data cleansing • Visualise a data set -Analyse visualisations to identify patterns, trends, and outliers • Draw conclusions and report findings • Visualise a data set 	<ul style="list-style-type: none"> • Describe and assess the creative benefits and ethical drawbacks of digital manipulation [• Explain how the manipulation of digital images amounts to arithmetic operations on their digital representation • Perform basic image editing tasks using appropriate software and combine them in order to solve more complex problems requiring image manipulation • Define key terms such as 'sample', 'sampling 	<ul style="list-style-type: none"> • Explain how networks can be protected from common security threats • Identify the most effective methods to prevent cyberattacks 	
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frequency/rate',

'sample size'

- Describe how sounds are represented as sequences of bits
- Explain the function of microphones and speakers as components that capture and generate sound
- Recall that sound is a wave
- Calculate representation size for a given digital sound, given its attributes
- Explain how attributes such as sampling frequency and sample size affect characteristics such as representation

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size and perceived quality, and the trade-offs involved

- Perform basic sound editing tasks using appropriate software and combine them in order to solve more complex problems requiring sound manipulation - Define 'compression', and describe why it is necessary
- Recall that bitmap images and pulse code sound are not the only binary representations of images and sound available

Ludus Admirandus