

COMPUTING CURRICULUM

Year 7

Maze Game

Content -

Students are creating a 'Pacman' style maze game for users who enjoy playing retro style games. They will consider the design of the maze ensuring the character can navigate around the maze collecting all the treasure. Students must use logical thinking to code 'Pacman', the treasure and the enemies. This will ensure they produce a functional game with varying levels of difficulty.

Skills -

Security: Setting up an external website account. Design: Creating all the components required for the game. Logical thinking: Writing a program to produce a functional game. Data Representation: Creating a scoring system to show progression through the game.

Horizons Den

Content

Students are creating a marketing campaign to promote a new piece of technology. The campaign will include both traditional and modern advertising methods including billboard banners, animations and social media.

Skills

Communication: Students will ensure the communication methods choice are fit for audience and purpose. Data analysis: The use of spreadsheets to show the profitability of their marketing campaign. Design: The production of numerous digital artefacts produced from a variety of software to ensure a successful advertising campaign. Security: Demonstrate an understanding of the implications involved in using Cloud Computing.

Year 8

BBC Micro:bit: Game Designer

Content -

Students will write textual code that will be run on BBC Micro:bits. They will produce a step counter for students to monitor their daily activity.

Skills -

Data representation: Understanding of how a computer communicates using binary and hexadecimal. Logical thinking: Textual coding using logical structures and algorithms.

Cyber Security Data Analyst

Content

Students are taking on the role of a 'Data analyst'. They will be given some 'big data' that they will have to organise, manipulate and present for a given purpose.

Skills

Data analysis: Use formulas and functions to process given data. To then draw conclusions and make recommendations for future action. Logical thinking: modelling given scenario's.

Year 9

Python: Game Designer

Content -

Students will use professional programming software to design, run, test and correct computer games. They will be creating functional games where the user can interact with the programme, writing the code for the game, and recognise and correcting any errors along the way.

Skills -

Data Analysis: Reading current coding examples and analysing which elements of code are needed for the game to function as required. Data Representation: Writing lines of code using industry standard coding structures including iteration, sequencing and variables. Logical thinking: using algorithms to ensure the code is functional and runs in the correct order.

Cyber crime protection officer

Content

Students will become the cyber crime induction officer. They will prepare an interactive cyber crime quiz that new employees at Twitter will complete to inform if they are an internet threat and require additional training.

Skills

Communication: Writing purposeful training materials covering all elements to security for new staff at Twitter. Design: Presentation methods for a corporate company. Ensuring Twitter branding and house style is consistently applied on the induction material. Logical thinking: Ordering the presentation in a logical manner to ensure it runs as designed. Security: Internal and external threats, the Impact of these and how to prevent them.

Year 10

Research user Interfaces

Content -

Students will compare and evaluate different user interfaces. For example Voice command and a Gui. They will report on the different ways they are used, and accessibility needs as a starting point.

Skills -

Students will present their findings of a variety of differing types of User Interfaces to a professional audience in a style of their choice. The report will include Hardware/Software, inclusivity/accessibility needs, demographics and test results. Students will also consider how the user interfaces are accessed, for example via Ad hoc networks, tethering. They will also include how the user interfaces communicate, looking closely at social media websites.

Designing user interface

Content

Students will design and create a user interface system for customers at Neoteric Sports stadium. The system will inform customers of hospitality, services and generic information.

Skills

Communication: Students will produce a system that will provide customers with all the information they may need for their visit to the Neoteric stadium. Design: Students will use project methodologies, Gantt/Pert Charts, Mood boards/Storyboards. They will also set Smart targets, decide what Input/Outputs devices, Hardware/Software will be required and consider any Risks/Constraints of their system and design considering design principles.

Security

Content

Students will write a security policy for the Neoteric staff. Considering legislation.

Skills

Communication: Students will consider the audience of the policy ensuring they include the following legislation: Copyright Act Data Protection Act Computing Misuse Act With Internal/External Threats and User Restrictions/Weaknesses (physical security), Internal/external threats Policy protection/Data recovery Intellectual property Copyright Protection Methods Malware Social engineering Password Policy.

Year 11

Sources of data and reliability

Content -

Students will look at different sources of data, where it has been collected and if it is reliable. They will consider the different ways that data can be presented before analysing and presenting information in the next project.

Skills -

Students look at the difference between data and Information, the presentation of data, Validation/Verification Data Collection/Big Data/Shared Data Data Security. Students will the present data and information in a variety of different formats for suitable audience and purpose. Including data/Information flow diagrams Forms of notation Shared data Environmental Issues.

Data analysis

Content

Students will analyse data using advanced formulas and functions. This will enable them to then present the analysis to a given audience for a given purpose.

Skills

This project involves a wide variety of Spreadsheet skills: Importing data Formatting Basic formula/functions If, Count IF V Lookup Logical Operators Macro's Softing/filtering Data Validation Conditional Formatting Charts/Graphs Combo Box Once the data has been analysed students will produce a report informing the audience of Trends, Patterns, Anomalies and any Errors.