Gymea Technology High School
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9 Computing Technology

Task 5: Modelling and Building Networks

Due Date: 28 Oct 2025

Distributed: 15 Sept 2025

Weighting: 30%

Task Type: Project

Syllabus Outcome/s: CT5-DPM-01, CT5-COL-01, CT5-DAT-01

Unit: Modelling networks and social connections

Task Description

Scenario

Gymea Technology High School has hired an IT company to design and model a network that shows how students, teachers, devices, and systems will be connected in the Tech Centre. Your role is to model and explain how the network works, using diagrams, simulations, and video presentation.

Part A: Documentation

1. **Purpose of the network** – *Explain* why the school needs this network and how it supports operations.
2. **Network hardware** – *Identify* and describe the key devices (router, switch, printer, server, IoT devices, etc.) and their roles.
3. **Transmission media** – *Describe* how Ethernet cabling and wireless connections are used to support device connectivity.
4. **Network Diagram** – Create a network diagram using **Cisco Packet Tracer**, showing how devices are connected, labelled with device names, IP addresses, connection type (wired/wireless)..
5. **Data processing and transmission** – *Explain* how hardware and software are used to manage, control and secure the movement of, and access to, data in networked digital systems.
6. **Network security** – *Outline* strategies to minimise or reduce attacks and exploitation on the network.

Part B: Screen Recording

Create a short screen recording demonstrating and explaining your network to include:

- Titles, transitions, narration, and visuals to guide the viewer
- A network simulation (e.g. Cisco Packet Tracer) showing devices connected and transmitting data
- Demonstration of configuring a range of device (e.g. assigning IP address, naming device, connecting to router, enabling security features)
- Demonstration of configuring at least one IoT device (smart devices interacting with the network)

Glossary of Key Words

These verbs will provide an understanding of the detail needed to successfully complete this task:

- **Demonstrate:** Show by example
- **Describe:** Provide characteristics and features
- **Explain:** Relate cause and effect. Make the relationships between things evident. Provide why and/or how.
- **Identify:** Recognise and name.
- **Outline:** Sketch in general terms; indicate the main features of

Details of Submission

PART A - Practical Project and Report
Submit your report in pdf format and CISCO Packet Tracer file to Moodle by the due date.

PART B - Screen Recording
Upload your completed video demonstration to Moodle by the due date.

Teacher Feedback and Student Self-Reflection

The task will be returned to students within **14 days** of the due date. Information on how to improve will be provided through written teacher feedback and the marking criteria. Students can clarify or seek further feedback by speaking with their teacher.

Upon return of the task and teacher feedback, students will also be expected to complete the following self-reflection form, to provide them with the opportunity to reflect on the strength of their performance, as well as areas that have been identified to strengthen in future tasks - https://forms.gle/Ck4y1jid49x7sKfq7

How does this link to my learning?

This task will allow students to:

- Demonstrates knowledge and skills in using a modern operating system and basic network configuration of devices to allow for communication between and to the Internet.
- Ability to document project work and communicate understanding of various network components, security risks and measures needed to secure a network

Assessment Procedures

Students should be fully aware of the School Assessment Procedures for their year group. These were provided at the beginning of the school year and are available off the school website under the Learning menu for each year group.

Syllabus Outcomes being assessed:

CT5-DPM-01: applies iterative processes to define problems and plan, design, develop and evaluate computing solutions

CT5-COL-01: manages, documents and explains individual and collaborative work practices

CT5-DAT-01: explains how data is stored, transmitted and secured in digital systems and how information is communicated in a range of contexts

Marking Criteria

PART A - Practical Project and Report					
Criteria	**0 - 1**	**2**	**3**	**4**	**5**
Purpose of Network	Student attempts to define a network or no understanding of the network function.	Student provides a basic understanding of how the network supports the school or identifies the needs of the network.	Student provides an outline of why the school needs the network and how it supports the operation of the school.	Student describes why the school needs the network and how it supports the operation of the school. Includes relevant examples.	Student clearly explains why the school needs the network and how it supports the operation of the school. Includes highly relevant examples.
Criteria	**1 - 2**	**3 - 4**	**5 - 6**	**7 - 8**	**9 - 10**
Network Hardware	Student attempts to define a network hardware or no understanding of the network hardware.	Student identifies a basic number of network hardware devices used including routers, switches, Wireless Access Points (WAP), servers, printers, Internet of Things (IoT) and identifies their roles within the network.	Student outlines some of the network hardware devices used including routers, switches, Wireless Access Points (WAP), servers, printers, Internet of Things (IoT) and their roles within the network. Includes examples.	Student describes most of the network hardware devices used including routers, switches, Wireless Access Points (WAP), servers, printers, Internet of Things (IoT) and their roles within the network. Includes relevant examples.	Student clearly describes all network hardware devices used including routers, switches, Wireless Access Points (WAP), servers, printers, Internet of Things (IoT) and their roles within the network. Includes highly relevant examples.
Transmission Media	Student provides limited or no understanding of how ethernet and/or wireless connections are used within a network to transmit data.	Student provides a basic understanding of how ethernet and/or wireless connections are used within a network to transmit data.	Student outlines how ethernet and wireless connections are used within a network to transmit data. Includes some examples.	Student describes how ethernet and wireless connections are used within a network to transmit data. Includes relevant examples for both types of connections.	Student clearly describes how ethernet and wireless connections are used within a network to transmit data. Includes highly relevant examples for both types of connections.

Network Diagram	Student attempts to produce a network diagram or no understanding of network diagrams.	Student creates a network diagram which may or may not relate to the scenario. Attempts to label some of the nodes of the network with basic information. Uses not standardised diagrams to represent nodes and connection types. Uses inappropriate connection types between nodes.	Student creates an appropriate network diagram which includes somewhat appropriate connection types, labeling of some nodes on the network showing some information (connection type, device name, ip address)	Student creates an highly appropriate network diagram which includes mostly appropriate connection types, labeling of most nodes on the network showing most information (connection type, device name, ip address)	Student creates a comprehensive and highly appropriate network diagram which includes labeling of all nodes on the network showing all relevant information (connection type, device name, ip address).
Data processing and transmission	Student provides limited or no understanding of the role hardware and software in managing the control and flow of data within a network.	Student identifies the how data is managed and/or secured within a network.	Student outlines the role of the hardware and software used in the management and security of data within a network. Includes examples.	Student describes the role of the hardware and software used in the management and security of data within a network. Includes relevant examples.	Student provides an extensive and detailed explanation of the role of the hardware and software used in the management and security of data within a network. Includes highly relevant examples.
Criteria	**0 - 1**	**2**	**3**	**4**	**5**
Network Security	Student attempts to define a network security or no understanding of the network security measures.	Student identifies some network security measures that can be implemented to minimise or reduce cyber attacks.	Student identifies a range of network security measures to minimise or reduce cyber attacks. Includes some examples.	Student outlines a range of network security measures to minimise and reduce cyber attacks. Includes relevant examples.	Student outlines a wide range of network security measures to minimise and reduce cyber attacks. Includes highly relevant examples.
					Part A TOTAL / 50

PART B - Network Demonstration					
Criteria	**1 - 4**	**5 - 7**	**8 - 12**	**13 - 16**	**17 - 20**
Node Configuration	The student's video attempts to mention device configuration or no understanding of device configuration.	The student provides limited narration on the configuration of a limited range of devices used on the network. Attempts to refer to device names, or ip addresses or security protocols.	The student's video outlines the configuration of some devices used on the network including reference to device names, ip addresses and/or security protocols. Outlines the purpose of assigning an IP address, naming the device and security measures.	The student's video describes the configuration of a range of devices used on the network including relevant device names, ip addresses and security protocols. Describes the purpose of assigning an IP address, naming the device and security measures.	The student's video clearly describes the configuration of a range of devices used on the network including reference to highly relevant device names, ip addresses and security protocols. Clearly describes the purpose of assigning an IP address, naming the device and security measures.
Criteria	**0 - 1**	**2**	**3**	**4**	**5**
Use of film to document the network solution	The student attempts to create a limited video (screen recording). The student attempts to capture relevant and original screen recordings related to the task.	The student creates an informative, video (screen recording). The video (screen recording) demonstrates use of some pre and post-production effects. The end product is a video (screen recording) of an elementary standard. The student provides original screen recordings that they have captured.	The student creates a substantial and informative video (screen recording). The video (screen recording) demonstrates reasonable quality in some aspects of its production including some pre and post-production effects (titles, transitions and visual aids). The end product is a video (screen recording) of substantial standard. The student provides a range of original screen recordings that they have captured.	The student creates a well-developed, informative, and entertaining video (screen recording). The video (screen recording) demonstrates reasonable quality in every aspect of its production including a range of pre and post-production effects (titles, transitions and visual aids). The end product is a video (screen recording) completed to a high standard. The student provides a wide range of screen recordings that they have captured.	The student creates an outstanding, informative, and entertaining video (screen recording). The video (screen recording) demonstrates quality in every aspect of its production including a range of pre and post-production effects (titles, transitions and visual aids). The end product is a video (screen recording)of professional standard. The student provides an outstanding range of original screen recordings that they have captured.

Students narrated voice	The student attempts to provide a narration using their own voice or uses AI for the narration.	The student provides a limited narration or spoken words are hard to understand and are unclear.	The student provides a clear voice which is easy to understand and is delivered with an appropriate pace and volume using their own voice.	The student provides a detailed narration which is clear and easy to understand throughout the video and the student uses their own voice. Audio clarity is of a high standard.	The student provides an extensive and detailed narration using their own voice. The student's voice is easily understood, delivered at a highly appropriate pace and volume. Audio clarity is of a professional standard.
					Part B TOTAL / 30
					OVERALL TOTAL / 80

Literacy Criteria

Literacy Outcomes	Elementary achievement You have:	Limited achievement You have:	Satisfactory achievement You have:	High achievement You have:	Outstanding achievement You have:
	0	0.25	0.5	0.75	1
Vocabulary *Uses technical vocabulary to explain concepts and/or range of precise and appropriate words for effect*	Very limited response. Few content words used.	Only simple words are used.	Some precise and technical words are used.	Sustained use of precise and technical words.	Sustained, consistent and fluent use of precise and technical words.
Punctuation *Use of correct and appropriate sentence and other punctuation for effect, and to aid in reading of the text*	No evidence of correct sentence punctuation.	Sentence punctuation is correctly used in at least one place - *one sentence is punctuated correctly.*	Some correct sentence level punctuation (at least 50%). May attempt other punctuation where it is required.	Mostly correct sentence level punctuation (80%) and at least two correct examples of other punctuation.	Writing contains accurate use of all applicable punctuation.
Sentences & Cohesion *The intentional construction of a variety of sentences to match purpose and audience, and the control of multiple sentence threads across the whole text.*	No clear evidence of sentences: a list of words OR text fragments.	At least one sentence is used correctly. Some meaning can be construed from the text.	Some correct formation of sentences. Mainly uses simple and compound sentences, but may attempt more complex structures.	Most sentences are correct. Range of sentence types and connectives are evident, but with varied effectiveness.	All sentences are correct, effective and controlled, and include a range of sentence types and connectives (complex sentences and other sophisticated structures)
Paragraphs *Paragraphs are used to effectively structure information and partition events and ideas*	No correct use of paragraphing; may be a block of text or random breaks.	Ideas are separated; paragraphs may contain some unrelated ideas.	At least ONE paragraph is well structured and develops an idea	Writing is organised into paragraphs that assist the reader to digest chunks of the text, but may not be linked or executed effectively.	All components of the paragraphs are evident and paragraphing is consistent and well-developed across the whole text.
Text Structure *Uses features of the appropriate text type*	No evidence of the structural features of the appropriate text type. *No attempt to write in the appropriate text type and/or response is off task.*	Minimal evidence of the structural features - *1 component evident* - of the appropriate text type.	Some evidence of the structural features - *2 components evident* - of the appropriate text type.	Substantial evidence of the structural features - *all components evident but there may be some lapses* - of the appropriate text type.	Coherent and controlled use of **all** the appropriate structural features of the text type.
	Level of response is well below syllabus expectation	Level of response is below syllabus expectation	Level of response is equivalent to syllabus expectation	Level of response is above syllabus expectation	Level of response is well above syllabus expectation

Literacy Total / 5