SIT202– Computer Networks and Communication

Task 7.2D: IoT and Networks

This is a Distinction Task

To achieve the distinction level, you need to demonstrate your ability to explore networking concepts beyond the unit content. For this distinction task, you will perform research on a few important topics related to new advancements in networking and produce a comprehensive research report.

Task Requirement

You need to conduct research on the given topic, analyse the protocol/network, and produce a research report. You need to submit the research report and other relevant materials to OnTrack. External sources should be appropriately cited and referenced with the IEEE referencing style (https://www.deakin.edu.au/students/studying/study-support/referencing/ieee). Your report should have a word count ranging from 1000 to 1100 words (excluding the reference section). Please also note that we assess the quality of the report for its

- contents comprehension,
- logical structure, organisation, and presentation,
- insightful analysis and thoughtful reflections of the topic,
- live demonstration of the implementation (recording),
- effective conclusion,
- range of credible and relevant sources to support claims and arguments,
- appropriate citation and reference.

Task Instruction

One of the required files for you to upload to this task is the Turnitin report of your research report. You are highly suggested to sparse at the least one day prior to the due date for uploading your report to the platform indicated in Turnitin | Students (deakin.edu.au) for self-checking and obtaining *the Turnitin similarity report.* You are also highly suggested to read through the information in the above Deakin Turnitin information page for details.

In SIT202, you learn the fundamentals of computer networking. However, computer network is a vast topic that support many technologies and applications, and it rapidly grows in every single day. Having a good understanding of basics of computer networks, now you are ready to explore the pinnacles and trenches of the world of computer networks.

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For this task, you are required to prepare a research report on

- **Internet of Things (IoT)**

The report is open-ended and flexible. You are required to do research on IoT, introducing the technology and implementing one of the IoT use cases in Cisco Packet Tracer and analysing of one of the most use application layer protocols in IoT, MQTT.

In your report, you could include sections such as Abstract, Introduction, Technological Discussions of the topics, implementation of sample use case of IoT, Analysis of the protocol, and Conclusion. You may include a list of references at the end of the report. You can also use a range of diagrams, graphs, and tables in your report to illustrate the impact of IoT on the future computer networking.

You could use the following questions (but not limited to), as a guide to prepare the report.

- What is IoT?
- How this technology/topic differ from the existing mechanisms in the computer networks?
- Why has this topic become popular recently/ what is the motivation behind it?
- What are the key technologies/ concept (hardware, software, architecture, different types of attacks, etc.) involved in this topic?
- What are the applications?
- How does this trend change the computer networking landscape?
- What are the changes required for the current networking paradigm to support the trend?
- What are the challenges in IoT?
- What are the different protocols used to support IoT use cases? Discuss different application protocols used.
- What is MQTT?
- How do I Implement a smart home that includes several smart appliances (an IoT use case) in Cisco packet tracer?
- How do I analyse MQTT protocol in Cisco packet tracer (tip: you can implement a MQTT broker in laptop, mobile connected to the LAN)? The following figure shows a sample smart home implementation in Cisco Packet Tracer. The analysis should include 1–2-minute video capture of the cisco packet tracer screen of your own implementation and MQTT in action (with your audio explanation).

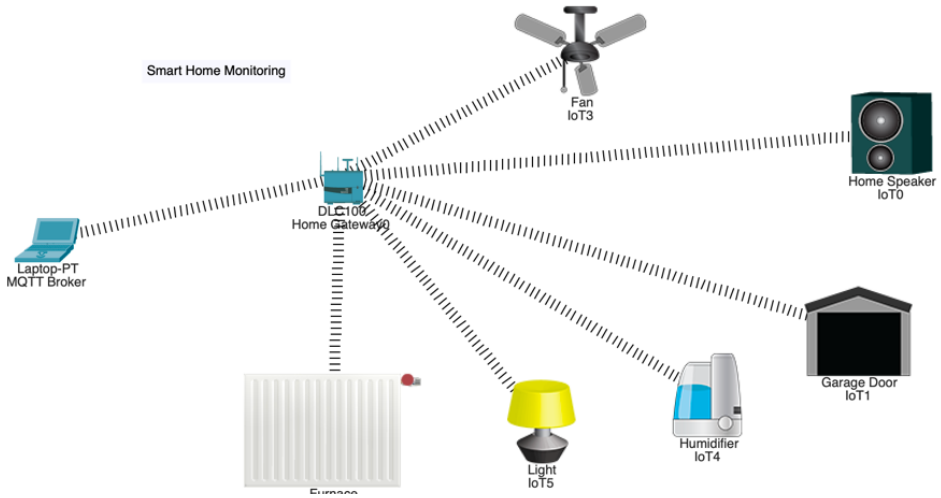

Figure: Smart home implementation in Cisco Packet Tracer

Task Submission Instruction

You need to submit the following files to OnTrack:

1. A pdf of your research report,
2. The Turnitin similarity report of your research report,
3. A pdf containing the link to 1–2-minute video recording of your demonstration/analysis.