PACKET TRACER: GOALS AND GUIDELINES

General:

- Complete the task in the assigned groups.
- Use Packet Tracer to design a network setup that addresses the needs as communicated in the attached document(s).
- You may use any design approach you deem appropriate. You must be able to properly motivate your decision in the documentation, as well as when asked.
- Focus on building a robust, yet affordable, network.
- Each section indicated on the diagram (reception, office, machine room, etc.) has to be isolated (e.g. a reception computer should not be able to communicate with an office/meeting room/etc. computer).
- Each section must have Internet connectivity. There is only one connection point to the Internet and it therefore has to be shared.
- The printers in each section should be accessible over the network, except where it is indicated that it is an individual printer.
- The network in each section should be representative of the perceived network needs of the section.
- The network must be able to accommodate any growth indicated.
- The overall cost should be kept as low as possible. **Assume that all printers, computers, non-network devices and servers are already available**. You may make assumptions regarding the capabilities of the servers, provided the assumptions are rational and well-motivated.
- Your Packet Tracer file must provide proper simulation of the network (i.e. it has to work in Packet Tracer)
- Determine appropriate subnets, IP addresses, and routing setups, where appropriate.
- Include, if needed, additional hardware for a virtual office environment.

Documentation:

- A project report must be submitted on eFundi prior to the demo. A physical copy of the documentation has to be brought along for the demo for evaluation purposes. This may be a printed copy, or a copy on a tablet, but must correspond to the version submitted on eFundi.
- The following must be included in the report:
    - Overview of the problem (diagram). Discuss possible issues that need to be addressed. Also focus on work-from-home aspects.
    - Describe the network topology your group designed. Discuss selection of routers, switches, repeaters, etc. and motivate the selection of each. **Do not discuss generic design approaches such as star topology – describe *your* network's topology.**
    - Provide and discuss the setup costs required to build your network. Identify network hardware currently on the market that will satisfy the needs of your network and identify the lowest price. Remember to consider the robustness of the network – significantly cheaper hardware is cheaper for a reason. Provide a full budget – include estimated labour costs and contingencies (estimated at 20%), based on current market trends (e.g. do not present a budget where you have network engineers involved if you cannot provide an absolutely convincing argument for why you would need their services – use the correct people for the correct job). **Do not include devices such as printers and PCs, as they are already available.**
    - Discuss how users of the network would connect remotely. Consider the following:
        - Which remote software should be used, and why (include choices in the budget);
        - Security implications (e.g. vulnerability to lateral movement);
        - Bring Your Own Device considerations; and
        - Establishment of a cooperative virtual workspace.

- Evaluate the designed network:
  - Does it fulfil the requirements?
  - What is good about this setup?
  - What is problematic about this setup?
  - Which part of the network is likely to need the most maintenance? Can this part of the network be installed in a way that facilitates maintenance?
  - Which parts, if any, would remain if the company moves to a virtual office environment completely? Why?
- Describe how your group managed the project load without face-to-face meetings. Describe advantages, disadvantages, and the lessons you learned from this exercise.

Group work:

- This project should be completed with regular face-to-face interaction, but make good use of digital communication channels to communicate with one another and keep up to date on each other's progress.
- Keep a full record of the group's communication as evidence. Keep backups of all emails and messages, and keep a record of any video conferences (date, time, length, participants, etc.)
- Each group must elect a group leader. The leader will be responsible for managing communications between the group members and coordinating efforts.
- Consult the disciplinary guidelines if a group member/leader causes problems. Remember to hold any meetings/hearings virtually and record the meetings/hearings if you suspect that there may be problems going forward.