POLITEKNIK BRUNEI	SCHOOL OF POLITEKNIK BRUNEI WEEKLY MODULE PLAN	**REFERENCE NUMBER:** PB/AS/LP/002 **VERSION:** 1.2 **REVISION DATE:** 06/10/2018 **EFFECTIVE DATE:** 1/1/2019

MODULE CODE/NAME	**NS4307, Network Programming**	**TOPIC**	**Java Sockets**
SEMESTER	**Semester 2, 2021 / 2022**	**GROUP CODE/INTAKE**	**DITN12 (Intake 11), DITN10R (Intake 9)**
SCHOOL/DEPT	**School of ICT**	**WEEK**	**Week 4 - 13/02 – 19/02**

PEDAGOGICAL APPROACH

☐ Knowledge Building ☑ Presentation ☐ Co-operative/Collaborative Lear ☐ Experimental Learnin ☑ Case Studies
☐ Discussion ☑ Blended Learning ☐ Debate ☐ Others, please specify _____

RESOURCES

Learning management sytem

LESSON LEARNING OBJECTIVES	METHOD OF INSTRUCTION/LEARNING ACTIVITIES	REFLECTIVE EVALUATION
At the end of this lesson, the student should be able to: **1) Understand the concept of Client Server Application** **2) Understand and able to implement basic Client Server Application**	**Session 1:** **Lecture: 1 hour** **- Review on Internet Protocol** **- Introduction to concept of Client Server** **- Explain the typical process in network programming** **- Explain Java ServerSocket object** **- Explain Java Socket object** **- Explain the process connection between server and client sockets.** **- Explain data transmission through Sockets** **- Explain how to get InputStream and OutputStream objects from Socket** **- Explain retrieved InputStream and OutputStream objects can be wrapped using DataInputStream and DataOutputStream objects.** **- Show example client server application for calculating area of circle.** **- Explain ConnectException and BindException** **- Explain how ServerSocket and Socket handle the port number.** **- Explain InetAddress object.** **- Show example to identify host name IP** **- Explain how a server can handle multiple clients** **- Explain Threads** **- Explain how threads handled on multiple CPU and single CPU.** **- Explain multithreading.** **- Explain Java Task.** **- Explain Java Thread.** **- Show example for server that can handle multiple clients.** **- Explain sending and receiving Object.** **- Show example client server that transmit Object.** **Practical: 2 hour** **- Facilitate students to implement client server application for calculating area of circle.** **- Facilitate students to implement client server application for calculating area of rectangle.** **- Facilitate students to implement server application that can handle multiple clients.**	**When conducting the lecture, noticed that students are having issue understanding the example where the server and client application both receiving and sending data.** **Decided to change the practical example to focusing the server application to receive data and the client application to send data.** **During the implementation of server application that handled multiple client, since the implementation is more or less the same as the server application the plan was to use another class to show how to implement them and copy the code from the previous server application then paste it accordingly into a thread. Unfortunately, this caused a bit of confusion on which part of the code goes where. It took longer than expected to explain. Should have implemented manually some part of it and copy paste some part to prevent confusion.**
At the end of this lesson, the student should be able to: **1) Understand and able to implement basic Client Server Application**	**Session 2:** **Practical: 1 hour 30 minutes** **- Facilitate implementation of calculating area of circle application.** **- Asked students to create new package week02.slot02** **- Asked students to move previously created classes that was not used on previous session to this newly created package.** **- Asked students to create CircleSessionHandler class.** **- Facilitate implementation server application to allow client to connect.** **- Facilitate implementation server application to receive radius from client and send area to client.** **- Facilitate implementation where server application will allow handling multiple client.** **- Facilitate implementation client application to connect to the server.** **- Facilitate implementation client application will send radius to server and receive area from client.** **- Allocate time for testing the implementation.** **Exercise: 1 hour 30 minutes** **- Facilitate implementation of server client number guessing game.** **- Basic Requirement:** **1) Server generate a random number from 1 to 100.** **2) Client needs to guess the random number until answering correctly.** **3) Server will inform the client if the guess is more or less the generated number.** **4) Client and server application will terminate after the client guessed correctly.** **- Advanced Requirement: Two-player guessing game (If students finished early on the basic requirement)** **1) Server will match two clients into a session in a first come first serve basis and generate a random number from 1 to 100.** **2) Both client needs to guess the session generated random number.** **3) Server will inform the respective client if the guess is more or less the generated number.** **4) The server will terminate the session after a client guessed correctly and informed who won.**	**During the practical, was focusing on implementing the best practice where it causes me not to let the student run the application periodically. It was after an hour of coding then I managed to let students to run and see the result of the implementation.** **For this example, need to re-evaluate the step by step implementation to allow periodic running of the application. Maybe ignore the try-catch statement, since they have learned this during object oriented programming module.** **During the exercise session, noticed that some student does not know how to approach the problem. It looks like some of them forgot the basics. More practice is needed to get the idea of client server and also for them to recap the basics learned during introduction to programming and object-oriented programming modules.**
At the end of this lesson, the student should be able to:	**Session 3:**	

NAME & SIGNATURE

MODULE LECTURER Jailani Abdul Rahman	**PROGRAMME LEADER / ~~ASSISTANT HOS (aHOS)/ HEAD OF SCHOOL (HOS)~~*** Jamiatul Zuhriah

DATE: 19/02/2023	DATE: 20/2/2023

COMMENTS BY PROGRAMME LEADER/ ASSISTANT HOS (aHOS)/ HEAD OF SCHOOL (HOS) (If any)

Checked. Well done cg, you noticed that the students had difficulties in this session and able to provide more practice to enhance their understanding.