 اونيز سنڀي ملڀسڀا قهغ UNIVERSITI MALAYSIA PAHANG PUSAT SAINS MATEMATIK	COURSE : DATA SCIENCE PROGRAMMING II (BSD2223)		MARKS:20(5%) <div>/20</div>
	TOPIC: CHAPTER 4 – Lists		
	NAME :	ID NO :	
	LAB REPORT 3	DATE: 14/4/2023	

CLO	PLO	Marks	%
CLO2: Analyse and summarise data using appropriate programming tools	PLO2: Cognitive Skills and Functional work skills with focus on Numeracy skills. C4: Analysis	/4	/1
CLO3: Develop programming codes to solve problems	PLO3: Functional work skills with focus on Practical, and Digital skills. P4: Mechanism	/16	/4

OBJECTIVES

From this report, students should be able to:

1. Create lists and arrays
2. Apply basic operation on lists.

GENERAL INSTRUCTIONS

- a) Use R language to solve the following questions.
- b) You are required to use R Notebook in Rstudio to compile your answers.
- c) Label your R Notebook file e.g. **01G_SD21007_AMINAH_LabReport2**
- d) Save and submit the answers (**pdf file**) in R Notebook to Kalam platform under your name.

STUDENT'S INTEGRITY DECLARATION

I declare that this is my original work and own effort. I understand that copying from others and any act of cheating are strictly prohibited. If the incidents occurred, it is considered plagiarism and I will be penalized.


Question 1 [CO2 – 4 marks]

- a) A list is a very general and flexible type of object in R. What are the main characteristics of list data structure?
- b) Suggest **TWO (2)** functions from family of **apply(.)** functions which can be used for lists?

Question 2 [CO3 – 16 marks]

- a) Create a list that contains the following:
 - a sequence of 25 evenly spaced numbers between -10 and 10
 - 4x4 matrix of logical vectors
(TRUE, FALSE, FALSE, TRUE, TRUE, FALSE, TRUE, FALSE, TRUE, FALSE, FALSE, FALSE, TRUE, FALSE, TRUE, TRUE) filled column-wise
 - a character vector with Four (4) strings
 - a character vector of (low,medium,medium,low,high,low)
- b) Name the list and its components constructed in (a).
- c) Extract elements from row 3 and row 1 of columns 3 and 4, in that order from the logical matrix in (a).
- d) Obtain all values from the sequence that are between -0.5 and 7. Round the numbers to TWO (2) decimal places.
- e) Replace the 'median' with 'low' in the character vectors.

Marking Sheet (For Lecturer's use only)

 اوتنيز سيني مليسيا قهق UNIVERSITI MALAYSIA PAHANG PUSAT SAINS MATEMATIK	COURSE : DATA SCIENCE PROGRAMMING II (BSD2223)		MARKS:20(5%)
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Question 1 [CO2 – 4 marks]

Question 1	CO2
(a)	/2
(b)	/2
Total	

Question 2 [CO3 – 16 marks]

RUBRICS FOR CLO3/PLO3

CLO3: Develop programming codes to solve problems	PLO3: Functional work skills with focus on Practical, and Digital skills. P4: Mechanism
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Question	Criteria	Achievement Level						Weightage	Score
		0	1	2	3	4	5		
		Incompetent	Inadequate	Emerging	Developing	Good	Excellent		
2(a)	Ability to construct a list of different data types using R.	Unable to do the task.	Limited ability to do the task.	Able to do the task with errors.	Able to do the task with no errors but wrong answer.	Able to do the task with no errors.	Able to do the task efficiently and correctly with no errors.	1.6	8
2(b)	Ability to construct the list and its component using R.	Unable to do the task.	Limited ability to do the task.	Able to do the task with errors.	Able to do the task with no errors but wrong answer.	Able to do the task with no errors.	Able to do the task efficiently and correctly with no errors.	0.4	2
2(c)	Ability to extract elements from matrix using R.	Unable to do the task.	Limited ability to do the task.	Able to do the task with errors.	Able to do the task with no errors but wrong answer.	Able to do the task with no errors.	Able to do the task efficiently and correctly with no errors.	0.4	2
2(d)	Ability to extract elements from vector using R.	Unable to do the task.	Limited ability to do the task.	Able to do the task with errors.	Able to do the task with no errors but wrong answer.	Able to do the task with no errors.	Able to do the task efficiently and correctly with no errors.	0.4	2
2(e)	Ability to replace the element in the character vector using R.	Unable to do the task.	Limited ability to do the task.	Able to do the task with errors.	Able to do the task with no errors but wrong answer.	Able to do the task with no errors.	Able to do the task efficiently and correctly with no errors.	0.4	2
								Total	