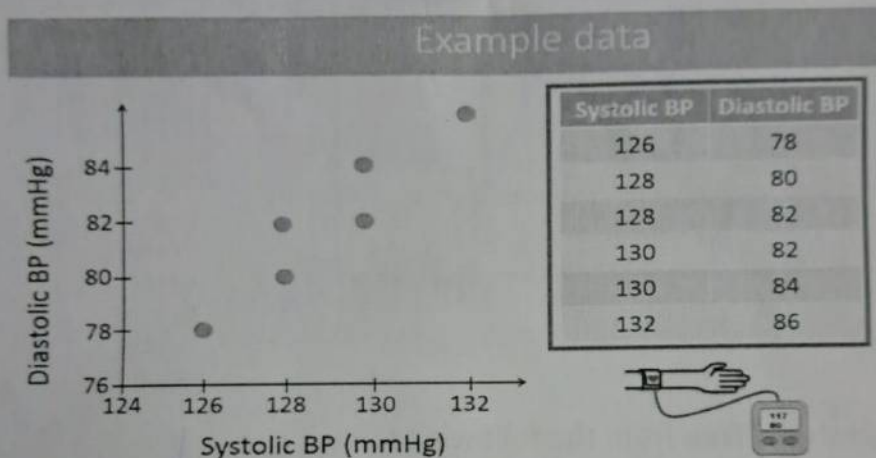
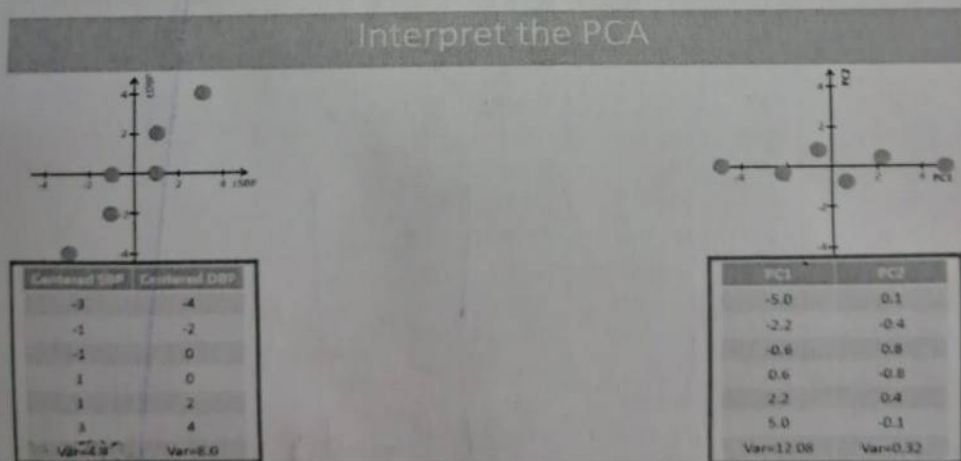


Department of Computer Science
Mid Term Paper

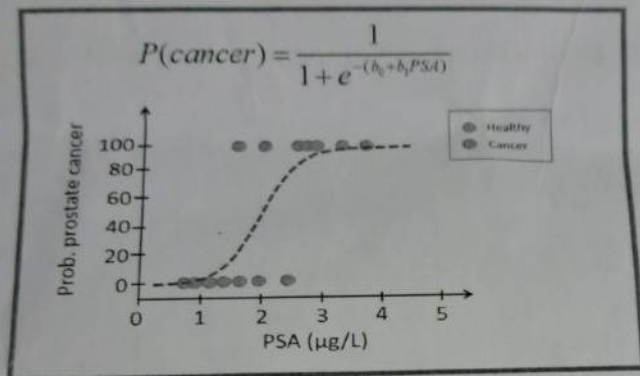
Program: BCS-6 (A & B)
Instructor: Nadeem Javaid
Course: CSC354: Machine Learning

Max. Marks: 25
Time allowed: 1.5 hrs
Date: May 9, 2023

Q1. Prove that PC1 and PC2 are the Principal Components of the table of Example data.



Q2. (a) Find the values of b_0 and b_1 in the following logistic function from the given table. (b) Write algorithm or draw flow chart and discuss Genetic Algorithm.



Status	PSA
Cancer	4.8
Cancer	4.5
Cancer	4.2
Cancer	4.1
Cancer	3.8
Cancer	3.5
Cancer	2.9
Cancer	2.8
Cancer	2.6
Cancer	2.1
Cancer	1.6
Healthy	3.2
Healthy	3.0
Healthy	2.9
Healthy	2.5
Healthy	2.4
Healthy	2.0
Healthy	1.8
Healthy	1.4
Healthy	1.3
Healthy	1.0
Healthy	0.9

Q3. Draw a Decision Tree from the following table.

Day	Outlook	Temp	Humidity	Wind	Play Tennis
D1	Sunny	Hot	High	Weak	No
D2	Sunny	Hot	High	Strong	No
D3	Sunny	Mild	High	Weak	Yes
D4	Overcast	Hot	High	Weak	Yes
D5	Rain	Mild	High	Weak	Yes
D6	Rain	Cool	Normal	Weak	Yes
D7	Rain	Cool	Normal	Strong	No
D8	Rain	Mild	Normal	Strong	Yes
D9	Overcast	Cool	Normal	Strong	Yes
D10	Sunny	Mild	High	Weak	No
D11	Sunny	Cool	Normal	Weak	Yes
D12	Rain	Mild	Normal	Weak	Yes
D13	Sunny	Mild	Normal	Strong	Yes
D14	Overcast	Mild	High	Strong	Yes
D15	Overcast	Hot	Normal	Weak	Yes
D16	Overcast	Cool	Normal	Strong	Yes
D17	Rain	Mild	High	Strong	No
D18	Rain	Mild	High	Strong	No