DWM Exp2 - 1211061

Aim:

Implementation of Bayesian Classification algorithm

Problem Statement:

A Marketing manager at All Electronics company needs help to guess whether a customer with a given profile will buy a new computer. The following database is available for analysis.

rid	age	income	student	credit_rating	class: buys_computer
1	youth	high	no	fair	no
2	youth	high	no	excellent	no
3	middle_aged	high	no	fair	yes
4	senior	medium	no	fair	yes
5	senior	low	yes	fair	yes
6	senior	low	yes	excellent	no
7	middle_aged	low	yes	excellent	yes
8	youth	medium	no	fair	no
9	youth	low	yes	fair	yes
10	senior	medium	yes	fair	yes
11	youth	medium	yes	excellent	yes
12	middle_aged	medium	no	excellent	yes
13	middle_aged	high	yes	fair	yes
14	senior	medium	no	excellent	no

Implement an algorithm to predict whether a ‘senior’ who is ‘student’ with ‘low’ income and ‘excellent’ credit-rating will buy a new computer or no?

Implementation:

//inputdata.txt

```
14
youth
high
no
fair
no
youth
high
no
excellent
no
middle
high
no
fair
yes
senior
medium
no
fair
yes
senior
low
yes
fair
yes
senior
low
yes
excellent
no
middle
low
yes
excellent
yes
youth
medium
no
fair
```

no
youth
low
yes
fair
yes
senior
medium
yes
fair
yes
youth
medium
yes
excellent
yes
middle
medium
no
excellent
yes
middle
high
yes
fair
yes
senior
medium
no
excellent
no
senior
low
yes
excellent

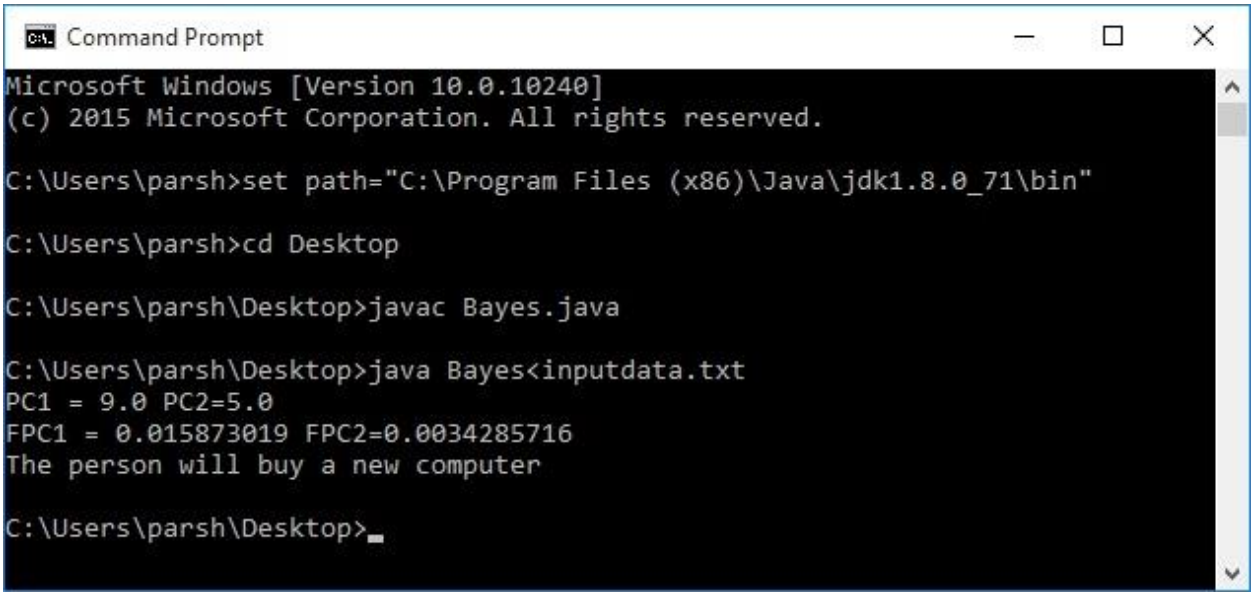
Code:

```
//Bayes.java

import java.io.*;
class Input
{
	String age,income,stud,cr,buy;
}
class Bayes
{
	public static void main(String args[]) throws Exception
	{
		BufferedReader br = new BufferedReader(new InputStreamReader(System.in));
		//System.out.println("Enter the number of records:");
		int n = Integer.parseInt(br.readLine());
		Input ob[] = new Input[n];
		int i;
		float pc1=0;
		float pc2=0;
		float pc1a=0,pc1i=0,pc1s=0,pc1cr=0;
		float pc2a=0,pc2i=0,pc2s=0,pc2cr=0;
		for(i=0;i<n;i++)
		{
			ob[i] = new Input();
			ob[i].age = br.readLine();
			ob[i].income = br.readLine();
			ob[i].stud = br.readLine();
			ob[i].cr = br.readLine();
			ob[i].buy = br.readLine();
			if(ob[i].buy.equals("yes"))
				pc1++;
			else
				pc2++;
		}
		//for(i=0;i<n;i++)
		//{
			//System.out.println(ob[i].age + "\t" + ob[i].income + "\t" + ob[i].stud +
"\t" + ob[i].cr + "\t" + ob[i].buy);
		//}
		//System.out.println("PC1 = "+pc1+" PC2="+pc2);
		//System.out.println("Enter the data:-");
		String newage=br.readLine();
		String newincome=br.readLine();
```

```
                String newstud=br.readLine();
                String newcr=br.readLine();
                for(i=0;i<n;i++)
                {
                        if(ob[i].buy.equals("yes"))
                        {
                                if(ob[i].age.equals(newage))
                                        pc1a++;
                                if(ob[i].income.equals(newincome))
                                        pc1i++;
                                if(ob[i].stud.equals(newstud))
                                        pc1s++;
                                if(ob[i].cr.equals(newcr))
                                        pc1cr++;
                        }
                        else
                        {
                                if(ob[i].age.equals(newage))
                                        pc2a++;
                                if(ob[i].income.equals(newincome))
                                        pc2i++;
                                if(ob[i].stud.equals(newstud))
                                        pc2s++;
                                if(ob[i].cr.equals(newcr))
                                        pc2cr++;
                        }
                }
                System.out.println("PC1 = "+pc1+" PC2="+pc2);
                //System.out.println("FOR PC1= " + pc1a + pc1i + pc1s + pc1cr);
                //System.out.println("FOR PC2= " + pc2a + pc2i + pc2s + pc2cr);
                float fpc1=0;
                float fpc2=0;
                fpc1= ((pc1a/pc1)*(pc1i/pc1)*(pc1s/pc1)*(pc1cr/pc1)*(pc1/n));
                fpc2= ((pc2a/pc2)*(pc2i/pc2)*(pc2s/pc2)*(pc2cr/pc2)*(pc2/n));
                System.out.println("FPC1 = "+fpc1+" FPC2="+fpc2);
                if(fpc1>fpc2)
                        System.out.println("The person will buy a new computer");
                else
                        System.out.println("The person will not buy a new computer");
        }
}
```

Output:


Command Prompt
Microsoft Windows [Version 10.0.10240]
(c) 2015 Microsoft Corporation. All rights reserved.
C:\Users\parsh>set path="C:\Program Files (x86)\Java\jdk1.8.0_71\bin"
C:\Users\parsh>cd Desktop
C:\Users\parsh\Desktop>javac Bayes.java
C:\Users\parsh\Desktop>java Bayes<inputdata.txt
PC1 = 9.0 PC2=5.0
FPC1 = 0.015873019 FPC2=0.0034285716
The person will buy a new computer
C:\Users\parsh\Desktop>