



# STUDENT DATABASE MANAGEMENT SYSTEM AND PREDICTION OF RESULTS USING DATA MINING

## SUBMITTED BY:

PARTICIPANT 01: SRISTI MITRA

ROLL: 2K19/CO/389 (A6)

PARTICIPANT 02: ZISHNENDU SARKER

ROLL: 2K19/CO/450 (A6)

SUBMITTED TO:  
**MANOJ SETHI**  
DATABASE MANAGEMENT  
SYSTEM

# INTRODUCTION

Student Management system can handle all the detail about a student. The details include college details, Students personal details, Academic details etc.

- The student management system is an automated version of manual Student Management System.
- It includes process like registration of the student's details, assigning the department based on their course and maintenance of the record.

Data mining is also used for discovering patterns from a certain dataset and showing test results by going through their academic and institutional records.



## PROBLEM STATEMENT

WE HAVE TO IDENTIFY ANY  
PROBLEM BEFORE SOLVING IT

•Problems occurred before having computerized system includes:

❏ File lost:

When computerized system is not implemented file is always lost because of human environment. due to some human error there may be a loss of records.

❏ File damaged:

When a computerized system is not there file is always lost due to some accident like of water by some member on file accidentally. Besides some natural disaster like floods or fires may also damage the files.

❏ Students does not get fruitful results back from their institution because of lack of time and scope to see all the students one by one and find out their flaws. It is not always possible to predict how much a student may score from their institutional records and behaviors. So, the school system does not become beneficial for the students.



# OBJECTIVE!

- Student Management system is a management information system for education establishments to manage student data.
- It provides capabilities for registering students in courses, admitting students, tracking student and submitting students' documents online.
- Ensure data integrity, privacy, and security in an open-access environment.
- We are planning to utilize the powerful database management, data retrieval and data manipulation. We will provide more ease for managing the data than manually maintaining in the documents. Our work is useful for saving valuable time and reduces the huge paperwork.
- Predicting a student database management system for the future result of particular or group of students based on their academic records, by using J48 algorithm through data mining.

# TOOLS AND PLATFORM?



We have used PHP ,  
HTML, CSS and  
javascript



The entire website  
executes on the  
XAMPP server.



For saving the data of  
students we have used  
mysql database.



To Access the website  
we can use any type of  
web browser.

# SOFTWARE AND HARDWARE REQUIREMENTS!

•It needs Most recent version of Google Chrome,  
Firefox, Internet Explorer, or safari.

•Hardware Requirement: –

1. CPU: Single Core 2.4 GHZ RAM: 512 MB
2. Graphics Card: Intel or Nvidia
3. Hard Drive: 5 Gigabytes
4. Network: Broadband Recommended –
5. Processor: Pentium

•Operating System: Window(XP, Vista, 7, 8, 10),  
Mac OS, Linux, Unix.

•Internet Connection with good speed.

# MODULE

**ADMIN:**

**REGISTRATION ( LOGIN )**

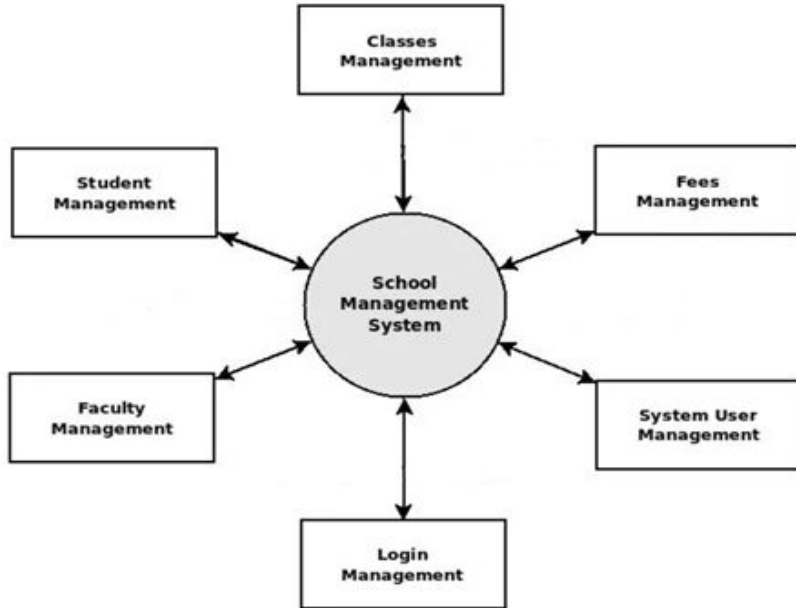
**ADD COURSE**

**ADD SUBJECT**

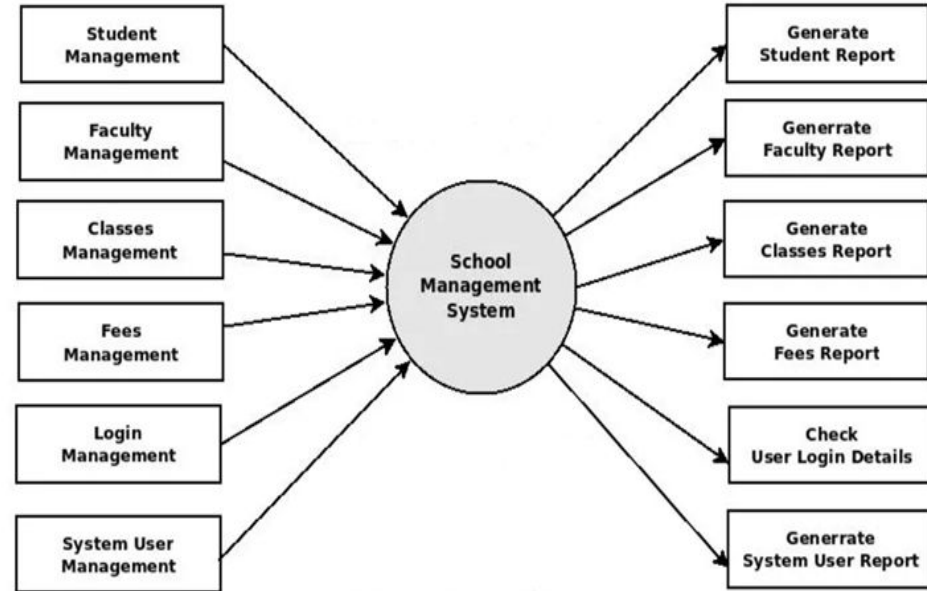
**VIEW AND MODIFY STUDENTS INFORMATION**

**VIEW AND MODIFY SESSIONS**

# DATA FLOW DIAGRAM

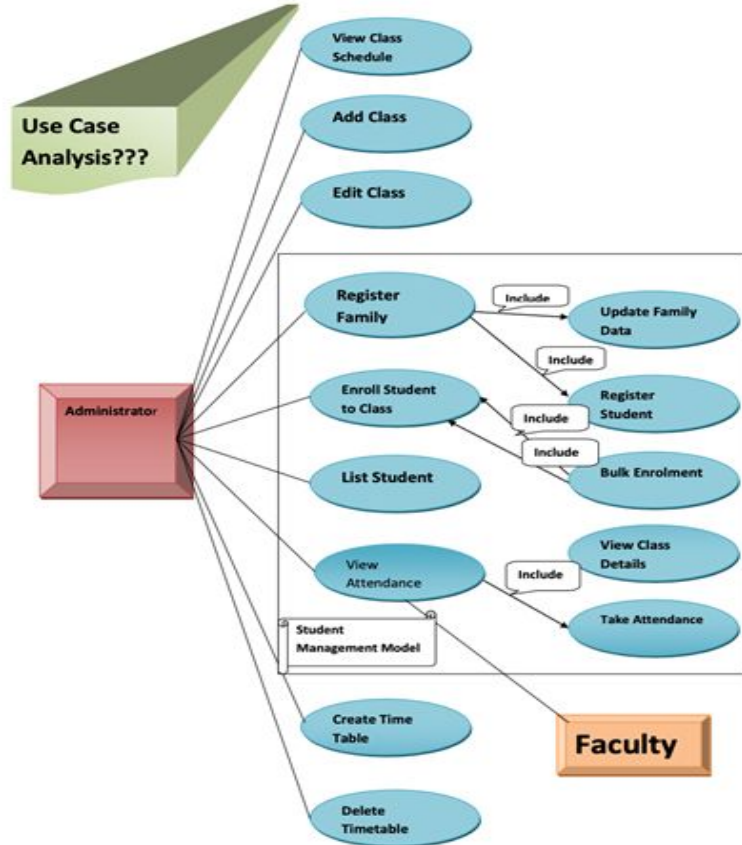


Zero Level DFD - School Management System

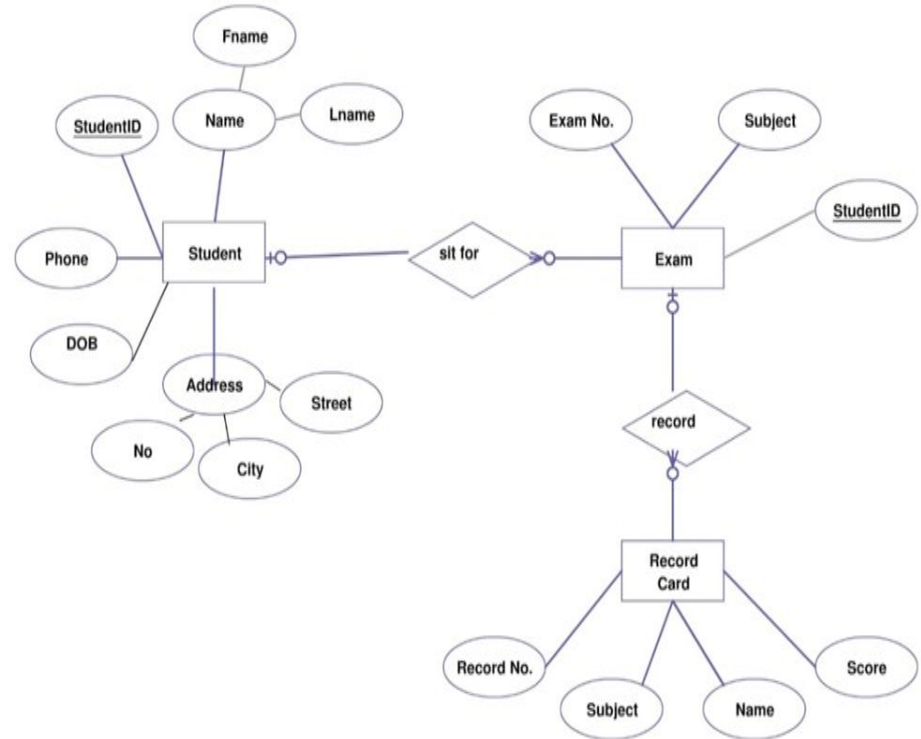


First Level DFD - School Management System

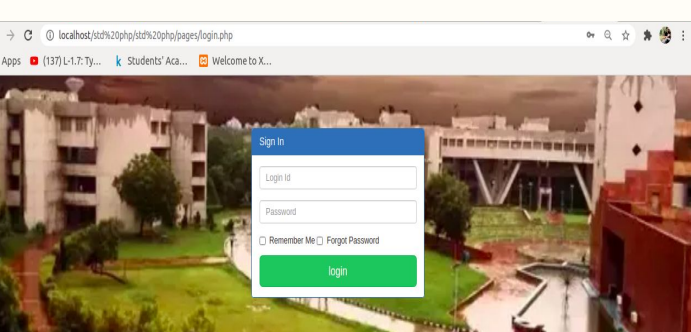
# USE CASE DIAGRAM:



# ER DIAGRAM :







## Project Screenshot :

Register

Select Course\*

Select Subject\*

Current Session\*

Personal Informations

First Name\*  Middle Name

Last Name  Gender ☐ Male ☐ Female ☐ Other

Guardian Name\*  Occupation

Family Income\*  Category\*

Physically Challenged\*  Nationality\*

Contact Informations

Mobile Number\*  Email Id

Country  State

City\*  Permanent Address\*

Correspondence Address\*

Academic Informations

Board\*  Roll No  Year Of Passing\*

performance\_schema

phpmyadmin

schoolmanagement

New

cities

countries

registration

states

subject

tbl\_course

tbl\_login

test

+ Options

←T→

▼

course

subject

fname

mname

lname

gender

gname

ocp

income

category

pchal

n

☐

10

ENGINEERING  
DRAWING+COMPUTER  
PROGRAMMING+  
COMPUTER...

rahul

roy

female

Ankit  
Kumar

Government  
Employee

500000

obc

yes

Ir

☐

9

MARKETING  
+MANAGEMENT+  
FINANCE+HUMAN  
RESOURCE+BUSI...

SRISTI

MITRA

syamol

OFFICER

Male

200000

other

yes

B

☐

10

ENGINEERING  
DRAWING+COMPUTER  
PROGRAMMING+  
COMPUTER...

Zishnu

Sarker

Sushil

retiered

Male

200000

general

no

B

**Add Subject**

Course Short Name\*

Course Full Name\*

Subject1

Subject2

Subject3

[Add Subject](#)

**View Course**

Show  entries Search:

S No	Subject1	Subject2	Subject3	Action
1	ENGINEERING DRAWING	COMPUTER PROGRAMMING	COMPUTER SCIENCE ESSENTIALS	<a href="#">Edit</a> <a href="#">Delete</a>
2	DATABASE MANAGEMENT SYSTEM	COMPUTER ORGANIZATION AND ARCHITECTURE	DATA STRUCTURE	<a href="#">Edit</a> <a href="#">Delete</a>
3	MARKETING	MANAGEMENT	FINANCE	<a href="#">Edit</a> <a href="#">Delete</a>
4	HUMAN RESOURCE	BUSINESS MANAGEMENT	ECONOMICS	<a href="#">Edit</a> <a href="#">Delete</a>

Showing 1 to 4 of 4 entries

Previous [1](#) Next

**Add Course**

Course Short Name\*

Course Full Name\*

Creation Date

[Create Course](#)

# Project Screenshot :

**View Course**

Show  entries Search:

S No	Short Name	Full Name	Created Date	Action
1	PHD	DOCTOR OF PHILOSOPHY	18-04-2021	<a href="#">Edit</a> <a href="#">Delete</a>
2	M.C.A	MASTER OF COMPUTER APPLICATION	11-04-2021	<a href="#">Edit</a> <a href="#">Delete</a>
3	B.COM	BACHELOR OF COMMERCE	12-04-2021	<a href="#">Edit</a> <a href="#">Delete</a>
4	B.TECH	BACHELOR OF TECHNOLOGY	12-04-2021	<a href="#">Edit</a> <a href="#">Delete</a>
5	M.B.A	MASTER OF BUSINESS ADMINISTRATION	17-04-2021	<a href="#">Edit</a> <a href="#">Delete</a>

Showing 1 to 5 of 5 entries

Previous [1](#) Next

localhost/phpmyadmin/index.php?route=/sql&server=1&db=schoolmanagement&table=subject&pos=0

L-1.7: Ty... Students' Aca... Welcome to X...

Server: localhost Database: schoolmanagement Table: subject

Showing rows 0 - 3 (4 total, Query took 0.0006 seconds.)

SELECT \* FROM `subject`

Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

Show all Number of rows: 25 Filter rows: Search this table Sort by key: None

Options	subid	cshort	ctfull	sub1	sub2	sub3	dt_created
<a href="#">Edit</a> <a href="#">Copy</a> <a href="#">Delete</a>	6	10	BACHELOR OF TECHNOLOGY	Engineering Drawing	Computer Programming	Computer Science Essentials	2016-04-16 19:51:43
<a href="#">Edit</a> <a href="#">Copy</a> <a href="#">Delete</a>	7	10	BACHELOR OF TECHNOLOGY	DATABASE MANAGEMENT SYSTEM	COMPUTER ORGANIZATION AND ARCHITECTURE	DATA STRUCTURE	2021-04-18 23:04:00
<a href="#">Edit</a> <a href="#">Copy</a> <a href="#">Delete</a>	8	9	BACHELOR OF COMMERCE	MARKETING	MANAGEMENT	FINANCE	2021-04-18 23:05:21
<a href="#">Edit</a> <a href="#">Copy</a> <a href="#">Delete</a>	9	9	BACHELOR OF COMMERCE	HUMAN RESOURCE	BUSINESS MANAGEMENT	ECONOMICS	2021-04-19 04:08:52

Check all With selected: [Edit](#) [Copy](#) [Delete](#) [Export](#)

Show all Number of rows: 25 Filter rows: Search this table Sort by key: None

Query results operations

localhost/phpmyadmin/index.php?route=/sql&server=1&db=schoolmanagement&table=subject&pos=0

Apps (137) L-1.7: Ty... Students' Aca... Welcome to X...

phpMyAdmin

Recent Favorites

- New
- information\_schema
- mysql
- performance\_schema
- phpmyadmin
- schoolmanagement
  - New
  - cities
  - countries
  - registration
  - states
  - subject
  - tbl\_course
  - tbl\_login
  - test

Server: localhost Database: schoolmanagement Table: subject

Showing rows 0 - 3 (4 total, Query took 0.0006 seconds.)

SELECT \* FROM `subject`

Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

Show all Number of rows: 25 Filter rows: Search this table Sort by key: None

Options	subid	cshort	ctfull	sub1	sub2	sub3	dt_created
<a href="#">Edit</a> <a href="#">Copy</a> <a href="#">Delete</a>	6	10	BACHELOR OF TECHNOLOGY	Engineering Drawing	Computer Programming	Computer Science Essentials	2016-04-16 19:51:43
<a href="#">Edit</a> <a href="#">Copy</a> <a href="#">Delete</a>	7	10	BACHELOR OF TECHNOLOGY	DATABASE MANAGEMENT SYSTEM	COMPUTER ORGANIZATION AND ARCHITECTURE	DATA STRUCTURE	2021-04-18 23:04:00
<a href="#">Edit</a> <a href="#">Copy</a> <a href="#">Delete</a>	8	9	BACHELOR OF COMMERCE	MARKETING	MANAGEMENT	FINANCE	2021-04-18 23:05:21
<a href="#">Edit</a> <a href="#">Copy</a> <a href="#">Delete</a>	9	9	BACHELOR OF COMMERCE	HUMAN RESOURCE	BUSINESS MANAGEMENT	ECONOMICS	2021-04-19 04:08:52

Check all With selected: [Edit](#) [Copy](#) [Delete](#) [Export](#)

Show all Number of rows: 25 Filter rows: Search this table Sort by key: None

Query results operations

# Measuring uniqueness :



## DATA MINING:

Data mining is the process of analyzing data in different angles and summarizing results it into useful information. We can also say that data mining is the process of finding correlations among many numbers of fields in a huge dataset. The major role of data mining is applying various procedures and algorithms in order to retrieve patterns from huge data.

Informally, it's the process of using a computer program to find patterns or relationships in data i.e. discovering patterns.

The major objective of this work is to use data mining methodologies to analyze student's test results based on their academic performance. Data mining provides many tasks that could be used to analyze the performance of the student. In this research, the classification is used to predict the student test result based on their academic performance. As there are many algorithms are used for data classification, in this paper the decision tree method is used for classification.

We are ultimately going to consider 3 different types of machine learning:

1. Classification Learning
2. Association Learning
3. Numeric Learning

# Measuring uniqueness :



## CLASSIFICATION:

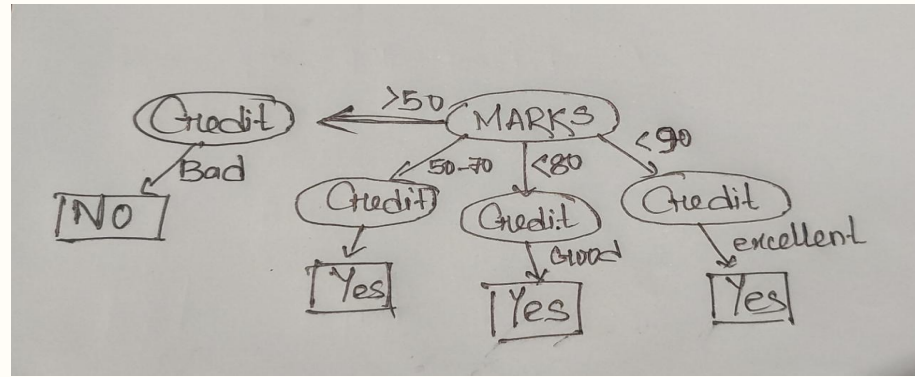
Classification is a data mining technique that assigns items in a collection to target categories . The objective of classification is to accurately predict the category which is unknown for each case in the data. For example, a classification model could be used to identify student results as pass, good, very good or excellent. A classification task begins with a data set with known class labels. For example, a classification model which predicts student results might be developed based on observed data for students academic performance over a period of time.

student_name	Marks	Credit	Good Results?
zishnu	90	Excellent	Yes
sristi	82	Good	Yes
Pooja	65	Fair	Yes
Ratri	45	bad	No



## DECISION TREE MODEL:

Decision tree models can be implemented in either serial or parallel form or in both serial and parallel form. Parallel implementation of decision tree algorithms is very useful in quickly generating results especially with the classification a huge data. When small or medium data sets are involved, serial implementation of decision tree algorithm will be used. The major objective of this work is to use data mining methodologies to analyze student's job-position based on their academic performance. Data mining provides many tasks that could be used to analyze the performance of the student.



# J48 ALGORITHM USED:

The J48 algorithm is used to implement Univariate Decision Tree approach, while its results are discussed.

- ➔ **WEKA** - an open source software provides tools for data preprocessing, implementation of several Machine Learning algorithms, and visualization tools so that you can develop machine learning techniques and apply them to real-world data mining problems
- ➔ Weka allow the generation of the visual version of the decision tree for the J48 algorithm. So, from the “Classifier” section select “trees” > “J4.8”. Also make sure that the “-C 0.25 -M 1” options are selected for the algorithm
- ➔ Decision rules will be found based on entropy and information gain ratio pair of each feature. In each level of decision tree, the feature having the maximum gain ratio will be the decision rule



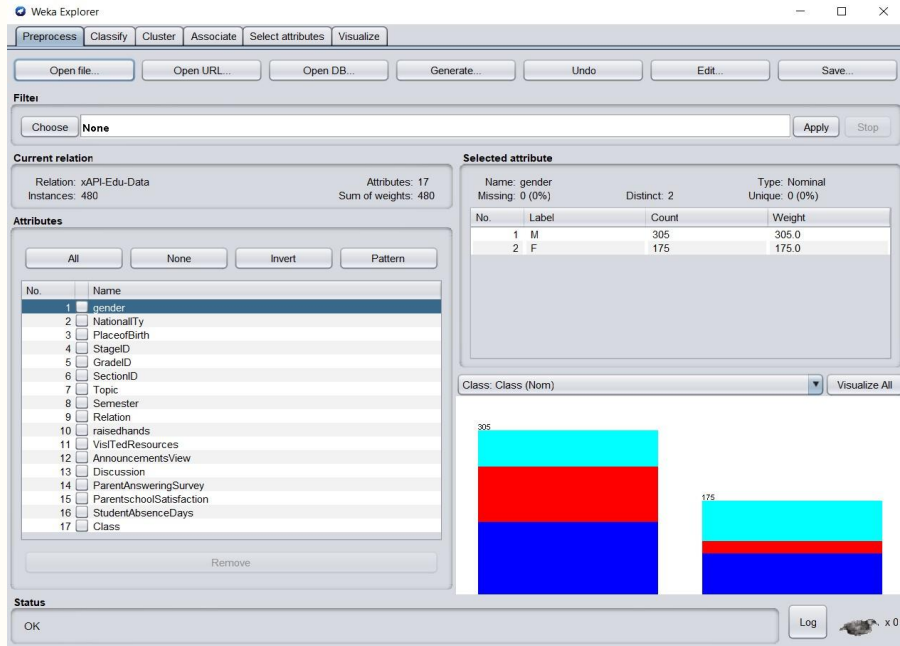
## PROCESS OF WEKA IMPLEMENTATION:

- We need to load Dataset into Weka.
- We choose classifier according to need.
- Select the attribute we want to work
- Go to result and switch it view the decision tree.

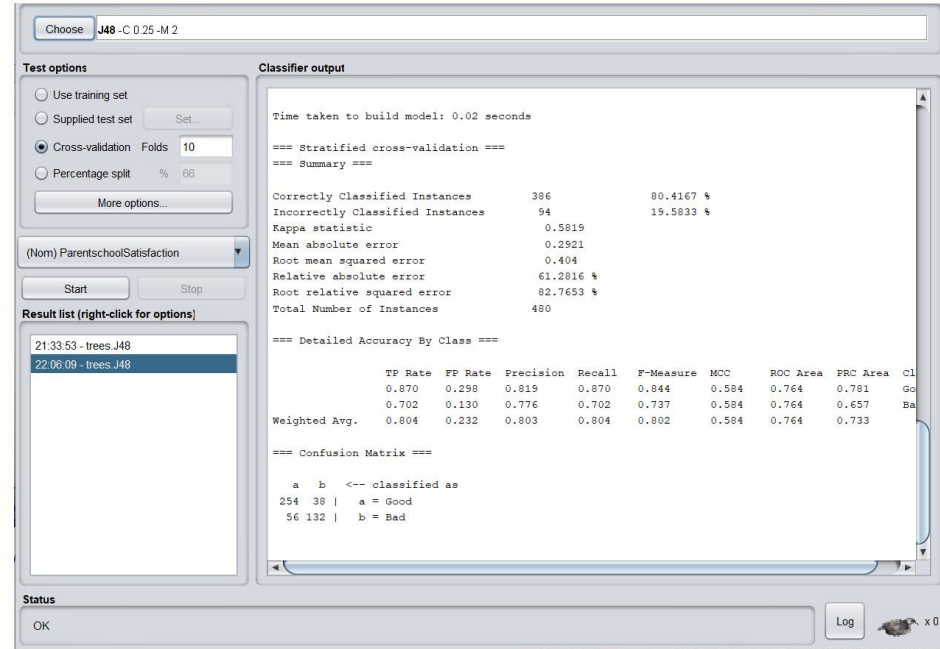
# J48 ALGORITHM PROCEDURAL THEORY IN WEKA:

- The dataset for a classification algorithm is divided into two data sets: 1. Training set is the one for building the model 2. Test set is the one for testing the model
- Model is built using the training set using the J48 algorithm. The objective of the work is to apply the model for the test dataset and to find the performance of the model by classifying the new instance. This model is generated for obtaining the student job position based on their academic performance. If the performance of the model is acceptable this model may be used for the forthcoming graduates to analyze the placement status.
- The model to classify the instances of the sample training set which is provided in format is ARFF (studentdata.arff)
- WEKA source file which will then include academic year, department etc.
- The attribute section is identical to the training data.
- Once the model is generated, it can be used to classify new instances. Here classification is used to classify new instance using J48 algorithm which is implemented in WEKA by the classifier
- The classification model generation process using studentdata.arff in WEKA
- The running information of model generation is generated
- For which The graphical versions of the decision tree are appeared
- Though there are a lot of attributes in student dbms but For this analysis the relevant attributes such as academic year, department of the graduate, final academic results and job- position of the graduate only used
- Once the model is generated, the details of the model such as total number of instance in the dataset, the number of correctly classified instance, incorrectly classified instance, and accuracy of the model will be displayed

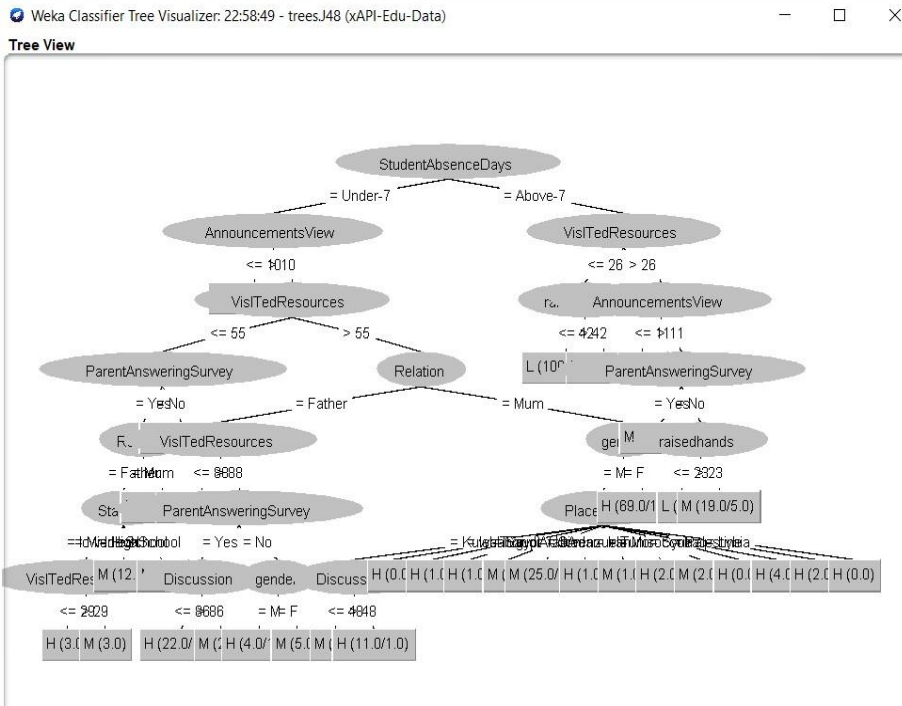
# IMPLEMENTATION OF J48 ALGORITHM IN WEKA:



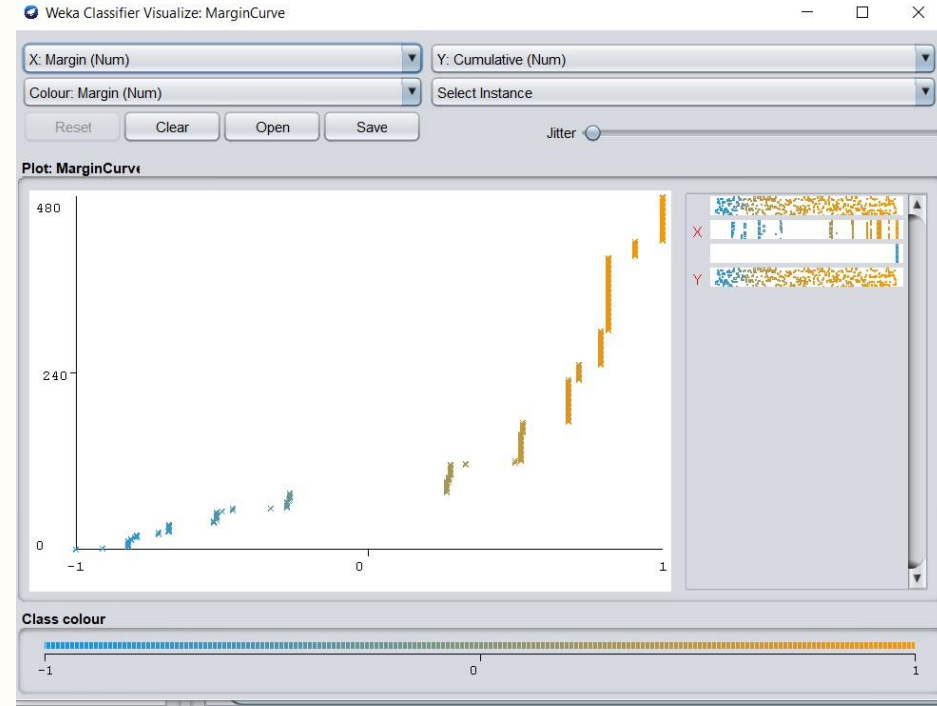
Here, we import the dataset in Weka and it shows the current relations, instances and attributes.



Here, we are choosing the classifier to J48 algorithm



Here is the decision tree view of the dataset imported.

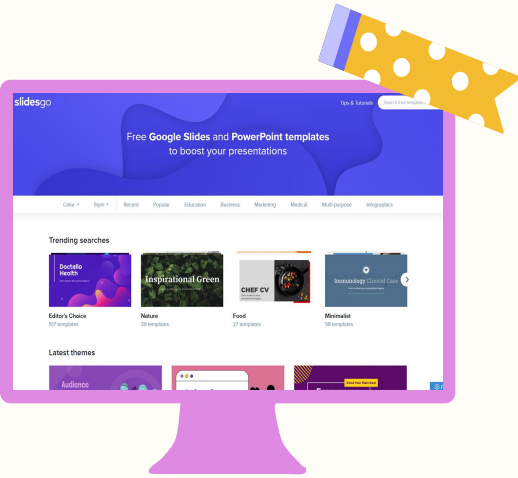


Here shows the marginal curve of the dataset



## FUTURE SCOPE:

- ❏ We will include more functionality as per the user requirements.
- ❏ We want to improved our home page, as it is the main thing which attracts all user
- ❏ Not a single website is ever consider as complete forever firstly because there is always something new requirement also are growing day by day.



# REFERENCES

1. Wisdom Kwami Takramah, Wisdom Kwasi Atiwoto. Student Database System for Higher Education: A Case Study at School of Public Health, University of Ghana. American Journal of Software Engineering and Applications. Vol. 4, No. 2, 2015, pp. 23-34.
2. Vivienne V. Forrester. School Management Information System: Challenges To Educational Decision- Making In The Big Data Era. International Journal on Integrating Technology in Education (IJITE) Vol.8, No.1, March 2019.
3. Shakeel Ahmad Dar. Development of a Student Database Management System for Polytechnic sector. International Journal of Advance Engineering and Research Development. Vol 5, Issue 01, Jan -2018
4. Mohammad Kamalal-Din Abbas."Students Fingerprint Attendance System for Faculty of Engineering using PHP & SQL" . Dept. EEE, University of Khartoum, Khartoum,Sudan, 2009.  
["https://projectabstracts.com/20661/students-fingerprint-attendance-system-for-faculty-of-engineering-using-php-sql.html"](https://projectabstracts.com/20661/students-fingerprint-attendance-system-for-faculty-of-engineering-using-php-sql.html)
5. Bassil, Youssef. "A Data Warehouse Design for A Typical University Information System." arXiv preprint arXiv:1212.2071 (2012).
6. Yu, Chong Ho, et al. "A data mining approach for identifying predictors of student retention from sophomore to junior year." Journal of Data Science 8.2 (2010): 307-325.

# THANKS!

SRISTI MITRA (2K19/CO/389)

&

ZISHNENDU SARKER

(2K19/CO/450)



ANY QUESTIONS?