



PM SHRI KENDRIYA VIDAYALA HEBBAL



INFORMATICS PRACTICES PROJECT

EMPLOYEES MANAGEMENT SYSTEM

2024-25

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CLASS : XII 'D'



CERTIFICATE

This is to certify that **SHIVANGI SINGH, AARUSHI DASILA and VIJENDRA R** of class **XII 'D'** of **PM SHRI KENDRIYA VIDYALAYA HEBBAL** have completed this project file under my supervision.

They have taken proper care and shown utmost sincerity in completion of the project.

I certify that this project is up to my expectations and as per the guidelines issued by CBSE.

Internal Examiner

External Examiner

ACKNOWLEDGEMENT

We would like to express our special thanks of gratitude to our teacher Mr.Ramesha as well as our principal sir, who gave us the golden opportunity to do this wonderful project.

This project helped us doing a lot of research which helped us learn many new thing as well as team work.

We are extremely grateful to our family members and friends who gave valuable suggestion and guidance for completion of our project.

This healthy cooperation and healthy criticism came handy and useful with them.

Hence, we would like to thank all the above mentioned people once again.

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INTRODUCTION

In today's fast-paced business environment, managing employees efficiently is crucial for the success of any organization. The Employee Management System (EMS) is a comprehensive tool designed to streamline various HR-related processes, providing an efficient way to handle employee information, monitor performance, and manage organizational tasks.

This project aims to build an Employee Management System that simplifies the management of employee records and processes within an organization. The system acts as a centralized platform to store, retrieve, and analyze employee data, ensuring accuracy and accessibility.

KEY FUNCTIONALITIES OF EMPLOYEES MANAGEMENT SYSTEM

1. **Authentication** : The user is prompted to enter a username and password to excess the system.
2. **Main Menu** : The program offers options for Data Analysis, Data Visualization, and Data Operations.
3. **Data Analysis** : Shows data employee in various formats, such as full dateset, sorted by name, first/last N records, and employees with highest and lowest salary.
4. **Data Visualization** : Options to create line charts, bar charts(vertical and horizontal), histograms for employee salary data.
5. **Data Operations** : Allows adding and removing of rows or columns to/from the dataset.
6. **File Handling** : Uses a CSV file named emp_data.csv
7. **Libraries used** : pandas, numpy, matplotlib.pyplot, and tabulate.

SOURCE CODE

```

import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
from tabulate import tabulate
while True:
    username=input("Enter User Name : ")
    password=input("\nEnter Password : ")
    if username == "" and password== "":
        print("\nWelcome to EMPLOYEES MANAGEMENT SYSTEM\n")
        break
    else:
        print("Invalid Username or Password")
while True:
    print('\t\t *** Employees Data Analysis Project *** ')
    print('\n\t\t1. Data Analysis')
    print('\n\t\t2. Data Visualization')
    print('\n\t\t3. Data Operations')
    print('\n\t\t4. Exit\n')
    choice=int(input('Select your Choice [1-4] : '))
    if choice==1:
        while True:
            print('\t*** EMPLOYEES MANAGEMENT SYSTEM ***\n')
            print('*'*50)
            print("\n\t1. Show Employees Data")
            print("\n\t2. Show Data Name-Wise")
            print('\n\t3. Show first nth records')
            print("\n\t4. Show last nth records")
            print("\n\t5. Display employee with highest Salary")
            print('\n\t6. Display employee with lowest Salary')
            print("\n\t7. For Exit the program\n\n")
            choice = int(input("Enter Your Choice [1-7] : "))
            if choice == 1:
                print("\nEmployees Data :\n\n")
                df=pd.read_csv("E:\\emp_data.csv")

print(tabulate(df,showindex=False,headers=['EMPNO','NAME','GENDER','BASIC','D
A','HRA','CCA','PF','TOTAL','NET'],tablefmt='pretty'))
elif choice == 2:

```

```

        print("\nEmployees Data Name - Wise :\n\n")
        df=pd.read_csv("E:\\emp_data.csv",usecols =
['NAME','GENDER','BASIC','DA','HRA','CCA','PF','TOTAL','NET'])
        df = df.sort_values(by='NAME')

print(tabulate(df,showindex=False,headers=['NAME','GENDER','BASIC','DA','HRA','
CCA','PF','TOTAL','NET'],tablefmt='pretty'))
        elif choice == 3:
            print("\nFirst N Rows \n\n")
            df=pd.read_csv("E:\\emp_data.csv")
            df = df.sort_values(by='EMPNO')
            nth = int(input("How many rows to display? : "))

print(tabulate(df.head(nth),showindex=False,headers=['EMPNO','NAME','GENDER','
BASIC','DA','HRA','CCA','PF','TOTAL','NET'],tablefmt='pretty'))
            elif choice == 4:
                print("\nLast N Rows \n\n")
                df=pd.read_csv("E:\\emp_data.csv")
                df = df.sort_values(by='EMPNO')
                nth = int(input("How many rows to display? : "))

print(tabulate(df.tail(nth),showindex=False,headers=['EMPNO','NAME','GENDER','B
ASIC','DA','HRA','CCA','PF','TOTAL','NET'],tablefmt='pretty'))
            elif choice == 5:
                print("\nDisplay employee with highest Salary :\n\n")
                df=pd.read_csv("E:\\emp_data.csv")
                df = df.sort_values(by='NET')

print(tabulate(df.tail(1),showindex=False,headers=['EMPNO','NAME','GENDER','BA
SIC','DA','HRA','CCA','PF','TOTAL','NET'],tablefmt='pretty'))
            elif choice==6:
                print("\nDisplay employee with highest Salary :\n\n")
                df=pd.read_csv("E:\\emp_data.csv")
                df = df.sort_values(by='NET')

print(tabulate(df.head(1),showindex=False,headers=['EMPNO','NAME','GENDER','B
ASIC','DA','HRA','CCA','PF','TOTAL','NET'],tablefmt='pretty'))
            elif choice==7:
                print('Exit to main menu.....')
                break
            else:
                print('Invalid Choice, Retry 1/2/3/4/5/6/7')
        elif choice==2:

```

```

while True:
    print('Data Visualization')
    print('\n\t1. Plot Line Chart (Name and Basic Salary)')
    print('\n\t2. Plot Bar Chart Vertical(Name and Basic Salary)')
    print('\n\t3. Plot Bar Horizontal Chart (Name and Basic Salary)')
    print('\n\t4. Plot Histogram (Basic Salary)')
    print('\n\t5. Exit\n')
    choic=int(input('Select your Choice [1-4] : '))

    if choic==1:
        print('Line Chart')
        df=pd.read_csv("E:\\emp_data.csv")
        df['NAME'] =
['JOHN','MOHAN','SOHAN','RADHA','GEETA','SIMRAN','PRIYA','SIMMI','PREM',
'ASHWIN']
        NAME=df["NAME"]
        BASIC=df["BASIC"]
        plt.ylabel("Basic Salary ----->")
        plt.xlabel("Name ----->")
        plt.title("*** Name and Basic Salary ***")
        plt.plot(NAME,BASIC, color='r')
        plt.grid()
        plt.savefig('emp_line.pdf')
        plt.show()
    elif choic==2:
        print('Bar Chart')
        df=pd.read_csv("E:\\emp_data.csv")
        df['NAME'] =
['JOHN','MOHAN','SOHAN','RADHA','GEETA','SIMRAN','PRIYA','SIMMI','PREM',
'ASHWIN']
        NAME=df["NAME"]
        BASIC=df["BASIC"]
        plt.ylabel("BASIC")
        plt.title("*** Name and Basic Salary ***")
        plt.bar(NAME,BASIC, color='r')
        plt.grid()
        plt.savefig('emp_bar.pdf')
        plt.show()
    elif choic==3:
        print('Bar Chart')
        df=pd.read_csv("E:\\emp_data.csv")

```

```

df['NAME'] =
['JOHN','MOHAN','SOHAN','RADHA','GEETA','SIMRAN','PRIYA','SIMMI','PREM',
'ASHWIN']
NAME=df["NAME"]
BASIC=df["BASIC"]
plt.xlabel("Basic Salary")
plt.title("Name and Basic Salary")
plt.barh(NAME,BASIC, color='r')
plt.grid()
plt.savefig('emp_barh.pdf')
plt.show()
elif choic==4:
    print('Histogram')
    df=pd.read_csv("E:\\emp_data.csv")
    df['NAME'] = ['JOHN', 'MOHAN','SOHAN','RADHA','GEETA',
'SIMRAN','PRIYA','SIMMI','PREM','ASHWIN']
    NAME=df["NAME"]
    BASIC=df["BASIC"]
    plt.title("Name and Basic Salary")
    plt.hist(BASIC, color='r')
    plt.grid()
    plt.savefig('emp_hist.pdf')
    plt.show()

elif choic==5:
    print('Exit to main menu.....')
    break
else:
    print('Invalid choice')
elif choice==3:
    while True:
        print('Data Operations')
        print('\n\t1. Add a row to Dataframe')
        print('\n\t2. Remove a row to Dataframe')
        print('\n\t3. Add a Column to Dataframe')
        print('\n\t4. Remove a Column to Dataframe')
        print('\n\t5. Exit\n')
        choic=int(input('Select your Choice [1-5] : '))
        if choic==1:
            df=pd.read_csv("E:\\emp_data.csv")
            EMPNO = int(input('Employee No : '))
            NAME= input('Employee Name : ')
            GENDER = input('Gender [M/F/T] : ')

```

```

BASIC= int(input('Basic Salary : '))
DA=.50*BASIC
HRA=.30*BASIC
CCA=.10*BASIC
PF=.12*BASIC
TOTAL=BASIC + DA + CCA + PF
NET = TOTAL - PF
cr=df['EMPNO'].count()

```

```

df1=pd.DataFrame({"EMPNO":EMPNO,"NAME":NAME,"GENDER":GENDER,
"BASIC":BASIC,"DA":DA,"HRA":HRA, "CCA":CCA,"PF":PF,"TOTAL":TOTAL,
"NET":NET}, index=[cr])
df=df._append(df1)

```

```

print(tabulate(df,showindex=False,headers=['EMPNO','NAME','GENDER','BASIC','D
A','HRA','CCA','PF','TOTAL','NET'],tablefmt='pretty'))
print('Record added Successfully.....')

```

```

elif choic==2:
df=pd.read_csv("E:\\emp_data.csv")

```

```

print(tabulate(df,showindex=False,headers=['EMPNO','NAME','GENDER','BASIC','D
A','HRA','CCA','PF','TOTAL','NET'],tablefmt='pretty'))
r=int(input("Enter the Employee Number to be removed : "))
df= df.drop(r-1)

```

```

print(tabulate(df,showindex=False,headers=['EMPNO','NAME','GENDER','BASIC','D
A','HRA','CCA','PF','TOTAL','NET'],tablefmt='pretty'))
print('Record deleted Successfully.....')
elif choic==3:

```

```

print('Add a Column')
df=pd.read_csv("E:\\emp_data.csv")
print("Add Column DEPARTMENT : ")

```

```

df['DEPARTMENT']=['HR','SALES','FINANCE','HR','SALES','FINANCE','HR','SAL
ES','FINANCE','SALES']

```

```

print(tabulate(df,headers=['EMPNO','NAME','GENDER','BASIC','DA','HRA','CCA','P
F','TOTAL','NET','DEPARTMENT'],tablefmt='pretty'))
print('Column added Successfully.....')
elif choic==4:

```

```

print('Remove a Column')
df=pd.read_csv("E:\\emp_data.csv")

```

```

C=input("Enter the Column Name to remove : ")
C=C.upper()
df=df.drop(C,axis=1)
print(tabulate(df,tablefmt='pretty'))
print('Column removed Successfully.....')
elif choic==5:
    print('Exit to main menu.....')
    break
else:
    print('Invalid choice')
elif choice==4:
    print('Exit from menu.....')
    break
else:
    print('Invalid choice')

```

OUTPUT SCREENS

Enter Your Choice [1-7] : 7

Exit to main menu.....

*** Employees Data Analysis Project ***

1. Data Analysis

2. Data Visualization

3. Data Operations

4. Exit

Select your Choice [1-4] : 1

Data Analysis

Enter Your Choice [1-7] : 2

Employees Data Name - Wise :

NAME	GENDER	BASIC	DA	HRA	CCA	PF	TOTAL	NET
ASHWIN	M	6000	3000	1800	600	720	12120	11400
GEETA	F	6000	3000	1800	600	720	12120	11400
JOHN	M	5000	2500	1500	500	600	10100	9500
MOHAN	M	3000	1500	900	300	360	6060	5700
REEM	M	5000	2500	1500	500	600	10100	9500

Employees Data :

EMPNO	NAME	GENDER	BASIC	DA	HRA	CCA	PF	TOTAL	NET
1	JOHN	M	5000	2500	1500	500	600	10100	9500
2	MOHAN	M	3000	1500	900	300	360	6060	5700
3	SOHAN	M	2000	1000	600	200	240	4040	3800
4	RADHA	F	5000	2500	1500	500	600	10100	9500
5	GEETA	F	6000	3000	1800	600	720	12120	11400
6	SIMRAN	F	2500	1250	750	250	300	5050	4750
7	PRIYA	F	3500	1750	1050	350	420	7070	6650
8	SIMMI	F	8000	4000	2400	800	960	16160	15200
9	PREM	M	5000	2500	1500	500	600	10100	9500
10	ASHWIN	M	6000	3000	1800	600	720	12120	11400

Enter Your Choice [1-7] : 4

Last N Rows

How many rows to display? : 4

EMPNO	NAME	GENDER	BASIC	DA	HRA	CCA	PF	TOTAL	NET
7	PRIYA	F	3500	1750	1050	350	420	7070	6650
8	SIMMI	F	8000	4000	2400	800	960	16160	15200
9	PREM	M	5000	2500	1500	500	600	10100	9500
10	ASHWIN	M	6000	3000	1800	600	720	12120	11400

Enter Your Choice [1-7] : 3

First N Rows

How many rows to display? : 4

EMPNO	NAME	GENDER	BASIC	DA	HRA	CCA	PF	TOTAL	NET
1	JOHN	M	5000	2500	1500	500	600	10100	9500
2	MOHAN	M	3000	1500	900	300	360	6060	5700
3	SOHAN	M	2000	1000	600	200	240	4040	3800
4	RADHA	F	5000	2500	1500	500	600	10100	9500

Enter Your Choice [1-7] : 5

Display employee with highest Salary :

EMPNO	NAME	GENDER	BASIC	DA	HRA	CCA	PF	TOTAL	NET
8	SIMMI	F	8000	4000	2400	800	960	16160	15200

Enter Your Choice [1-7] : 6

Display employee with highest Salary :

EMPNO	NAME	GENDER	BASIC	DA	HRA	CCA	PF	TOTAL	NET
3	SOHAN	M	2000	1000	600	200	240	4040	3800

Enter Your Choice [1-7] : 7

Exit to main menu.....

*** Employees Data Analysis Project ***

1. Data Analysis

2. Data Visualization

3. Data Operations

4. Exit

Select your Choice [1-4] : 2

Data Visualization

1. Plot Line Chart (Name and Basic Salary)

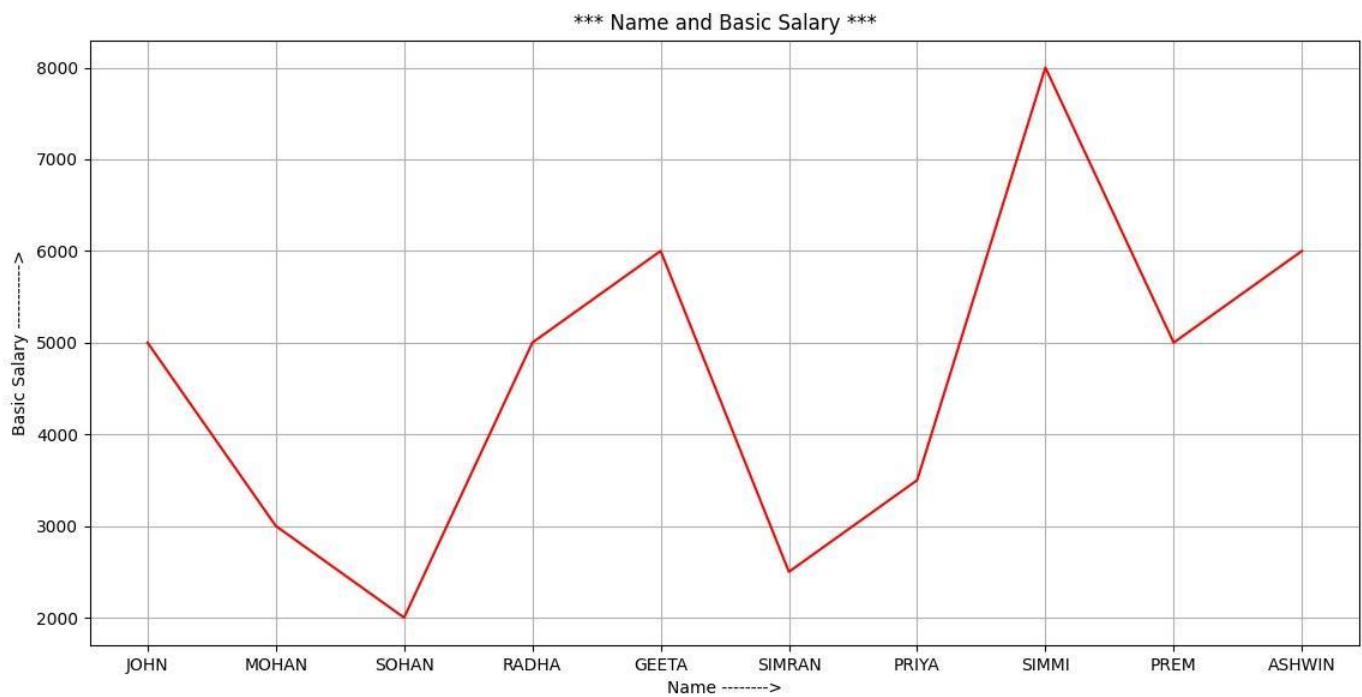
2. Plot Bar Chart Vertical(Name and Basic Salary)

3. Plot Bar Horizontal Chart (Name and Basic Salary)

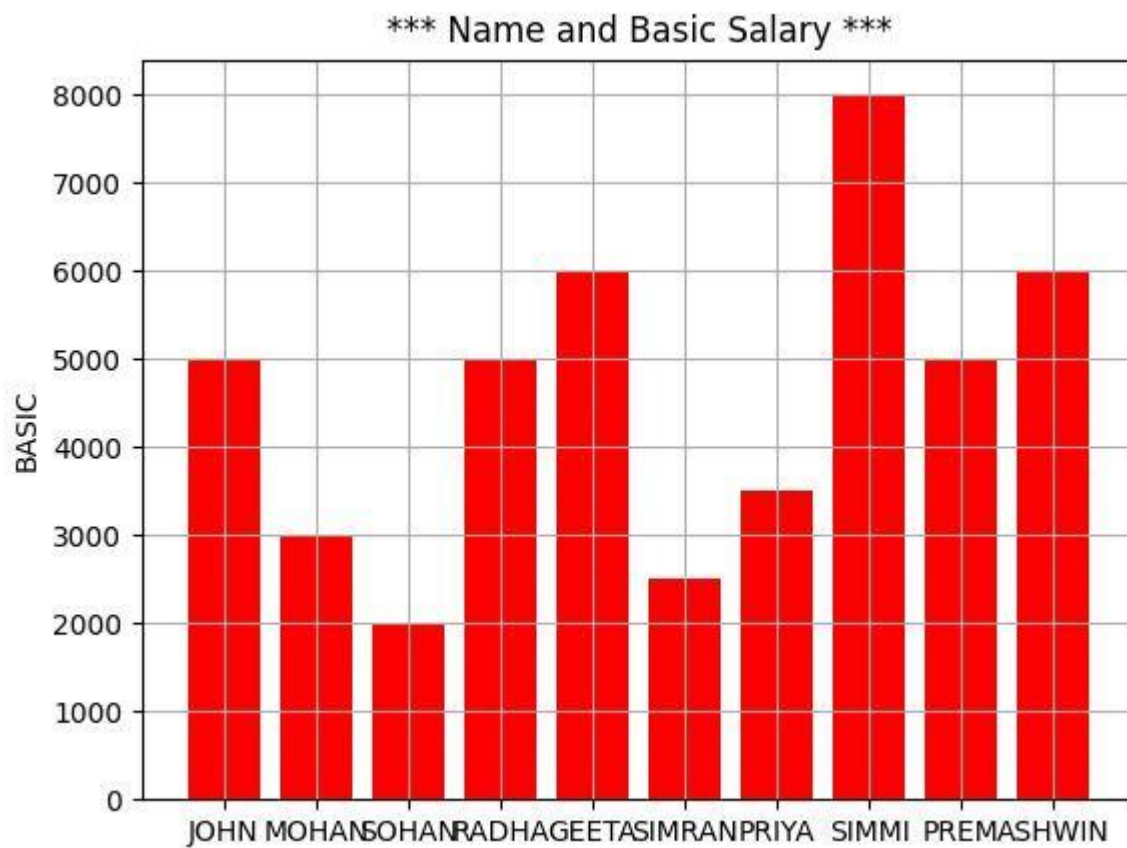
4. Plot Histogram (Basic Salary)

5. Exit

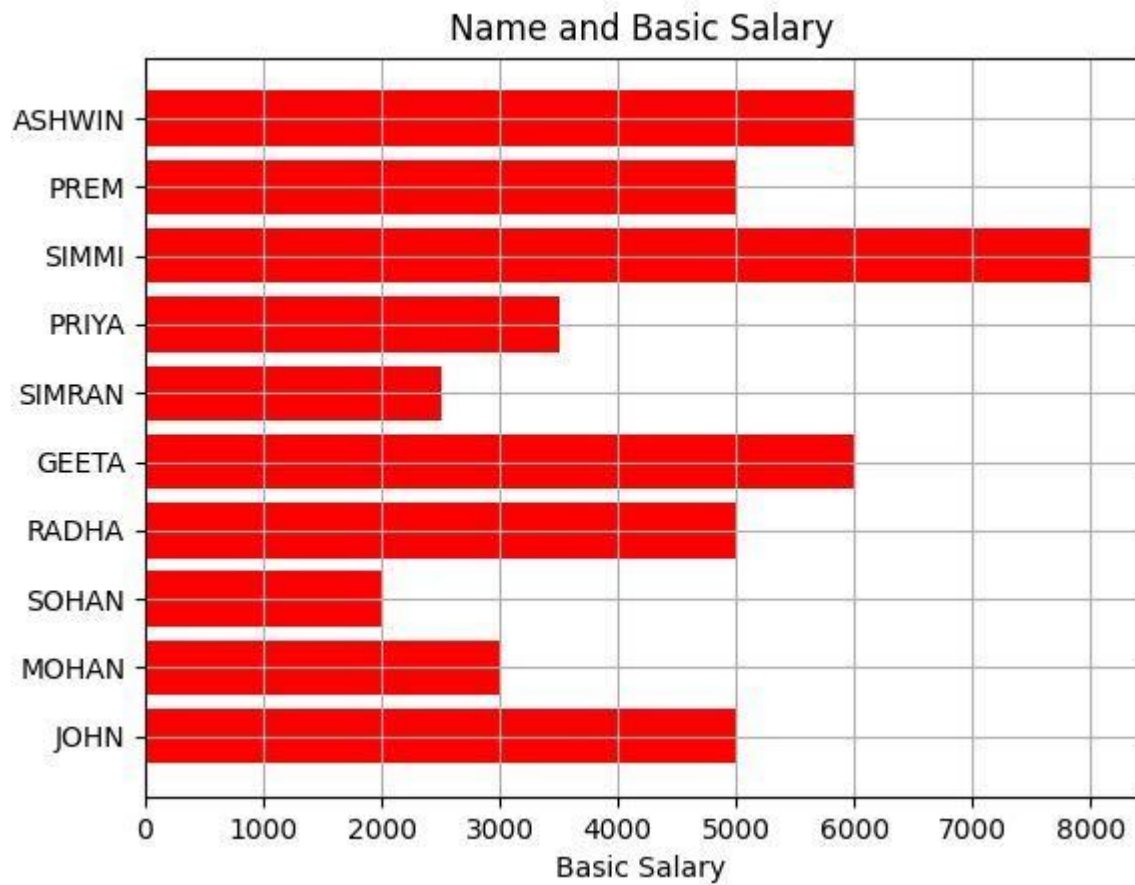
Select your Choice [1-4] : 1
Line Chart



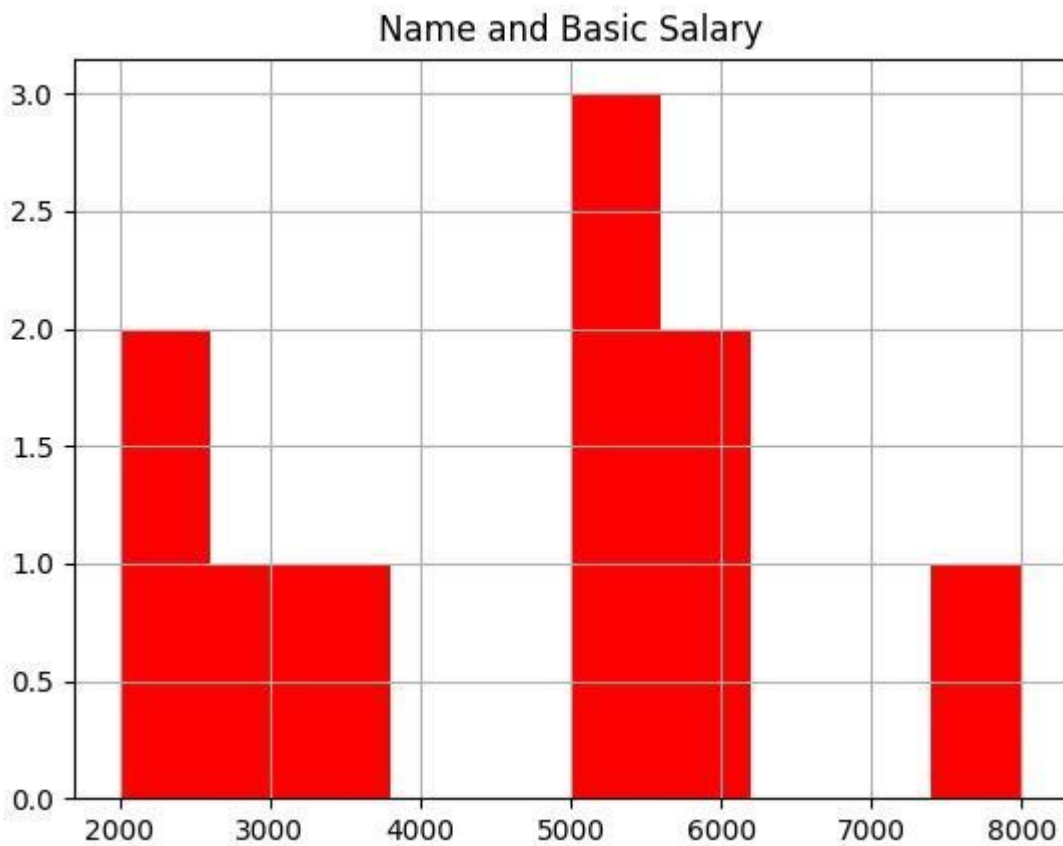
Select your Choice [1-4] : 2
Bar Chart



Select your Choice [1-4] : 3
Bar Chart



Select your Choice [1-4] : 4
Histogram



Enter Your Choice [1-7] : 7

Exit to main menu.....

*** Employees Data Analysis Project ***

- 1. Data Analysis**
- 2. Data Visualization**
- 3. Data Operations**
- 4. Exit**

Select your Choice [1-4] : 3

Data Operations

Select your Choice [1-5] : 1
Employee No : 11
Employee Name : Aarushi
Gender [M/F/T] : F
Basic Salary : 10000

EMPNO	NAME	GENDER	BASIC	DA	HRA	CCA	PF	TOTAL	NET
1	JOHN	M	5000	2500.0	1500.0	500.0	600.0	10100.0	9500.0
2	MOHAN	M	3000	1500.0	900.0	300.0	360.0	6060.0	5700.0
3	SOHAN	M	2000	1000.0	600.0	200.0	240.0	4040.0	3800.0
4	RADHA	F	5000	2500.0	1500.0	500.0	600.0	10100.0	9500.0
5	GEETA	F	6000	3000.0	1800.0	600.0	720.0	12120.0	11400.0
6	SIMRAN	F	2500	1250.0	750.0	250.0	300.0	5050.0	4750.0
7	PRIYA	F	3500	1750.0	1050.0	350.0	420.0	7070.0	6650.0
8	SIMMI	F	8000	4000.0	2400.0	800.0	960.0	16160.0	15200.0
9	PREM	M	5000	2500.0	1500.0	500.0	600.0	10100.0	9500.0
10	ASHWIN	M	6000	3000.0	1800.0	600.0	720.0	12120.0	11400.0
11	Aarushi	F	10000	5000.0	3000.0	1000.0	1200.0	17200.0	16000.0

Enter the Employee Number to be removed : 10

EMPNO	NAME	GENDER	BASIC	DA	HRA	CCA	PF	TOTAL	NET
1	JOHN	M	5000	2500	1500	500	600	10100	9500
2	MOHAN	M	3000	1500	900	300	360	6060	5700
3	SOHAN	M	2000	1000	600	200	240	4040	3800
4	RADHA	F	5000	2500	1500	500	600	10100	9500
5	GEETA	F	6000	3000	1800	600	720	12120	11400
6	SIMRAN	F	2500	1250	750	250	300	5050	4750
7	PRIYA	F	3500	1750	1050	350	420	7070	6650
8	SIMMI	F	8000	4000	2400	800	960	16160	15200
9	PREM	M	5000	2500	1500	500	600	10100	9500

Record deleted Successfully.....

Select your Choice [1-5] : 3
Add a Column
Add Column DEPARTMENT :

	EMPNO	NAME	GENDER	BASIC	DA	HRA	CCA	PF	TOTAL	NET	DEPARTMENT
0	1	JOHN	M	5000	2500	1500	500	600	10100	9500	HR
1	2	MOHAN	M	3000	1500	900	300	360	6060	5700	SALES
2	3	SOHAN	M	2000	1000	600	200	240	4040	3800	FINANCE
3	4	RADHA	F	5000	2500	1500	500	600	10100	9500	HR
4	5	GEETA	F	6000	3000	1800	600	720	12120	11400	SALES
5	6	SIMRAN	F	2500	1250	750	250	300	5050	4750	FINANCE
6	7	PRIYA	F	3500	1750	1050	350	420	7070	6650	HR
7	8	SIMMI	F	8000	4000	2400	800	960	16160	15200	SALES
8	9	PREM	M	5000	2500	1500	500	600	10100	9500	FINANCE
9	10	ASHWIN	M	6000	3000	1800	600	720	12120	11400	SALES

Column added Successfully.....

Select your Choice [1-5] : 4

Remove a Column

Enter the Column Name to remove : DA

0	1	JOHN	M	5000	1500	500	600	10100	9500
1	2	MOHAN	M	3000	900	300	360	6060	5700
2	3	SOHAN	M	2000	600	200	240	4040	3800
3	4	RADHA	F	5000	1500	500	600	10100	9500
4	5	GEETA	F	6000	1800	600	720	12120	11400
5	6	SIMRAN	F	2500	750	250	300	5050	4750
6	7	PRIYA	F	3500	1050	350	420	7070	6650
7	8	SIMMI	F	8000	2400	800	960	16160	15200
8	9	PREM	M	5000	1500	500	600	10100	9500
9	10	ASHWIN	M	6000	1800	600	720	12120	11400

Column removed Successfully.....

Data Operations

- 1. Add a row to Dataframe
- 2. Remove a row to Dataframe
- 3. Add a Column to Dataframe
- 4. Remove a Column to Dataframe
- 5. Exit

Select your Choice [1-5] : 5

Exit to main menu.....

*** Employees Data Analysis Project ***

- 1. Data Analysis
- 2. Data Visualization
- 3. Data Operations
- 4. Exit

Select your Choice [1-4] : |

BIBLIOGRAPHY

We took the information of our project from the following sources:

Reference Books :

- ☐ Informatics practices by Sumita Arora
- ☐ Complete refrence with python

Websites:

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- ☐ <https://www.google.com>
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