

**INTERNSHIP REPORT**  
**ON**  
**PYTHON COMPITATIVE CODEING**

**Internship Report is submitted**

**In accordance with requirement of degree of**

**BACHELOR OF TECHNOLOGY**

**IN**

**ELECTRICAL AND ELECTRONICS ENGINEERING**

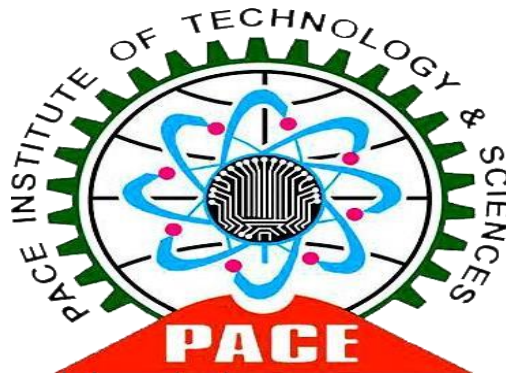
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**PACE INSTITUTE OF TECHNOLOGY AND SCIENCES (AUTONOMOUS)**

(Affiliated to Jawaharlal Nehru Technological University Kakinada, Kakinada &

Accredited by NAAC 'A' GRADE, An ISO 9001-2015 Certified Institution)

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(2024-2025)

# PROJECT TITTLE

## PATIENT PULSE ANALYSIS

**Date:** june 11<sup>th</sup> 2024

**Name:** A.ARUNA

**ABSTRACT:** This project is about brief explination and display about patient pulse analysis. In this analysis we verify how many female patients and male patients are there with there age differences and heart rate, blood pressure, sugar level differences and who has maximum and minimum heart rate and blood pressure and sugar level.

**DESCRIPTION:** This project is about patient pulse analysis . we take the input as the patient health details .we analysis the patient health conditions based on heart rate, blood pressure and sugar levels.

### Requirements:

#### Functional requirements:

.patient details: user can take input as number of patients

gender: user can take gender differences and store

.condition of patient: user can take the maximum health rate and blood pressure and sugar level

#### Non functional requirements:

**Performance:** The system is provide real time analysis with minimal latency to ensure timely patient monitoring

**Reliability:** It should be highly dependable ensuring accurate pulse measurements consistently

**Scalability:** The system should be able to handle varying loads from individual patient monitoring to large scale health care facilities

**Security:** protecting patient data is crucial so the system must comply with health care privacy regulations and employ robust encryption methods.

**Usability:** The interface should be intuitive and user friendly and health care professionals to easily interpret and utilize the pulse analysis data.

**Accuracy:** The analysis should be highly accurate with minimal margin of error to ensure the reliability of the diagnostic information provided.

## **APPROACH:**

**1.Data acquisition:** obtain the pulse data from the patient using sensors such as photo plethysmo graphy (ppg) sensors which measure changes in blood volume in the microvascular bed of tissue .

**2.signal processing :** pre process the raw pulse data to remove noise and artifacts and extract relevant features such as pulse rate ,pulse wave form morphology and variability .

**3.Features extraction:** Identify key features from the processed pulse that are indicative of the patients health status.

**4.Pattren Recognition:** Analyze the extracted features using pattern Recognition algorithms to identify patterns associated with specific health condition or anomalies

**5.descriptive analytics:** use statistical methods to summarize and describe historical data .This includes calculating the average health rate and blood pressure and sugar levels and other relevant matrices.

**6.Continuous monitoring:** Implement continuous monitoring machanisms to track changes in the patients pulse over time , enabling early detection of abnormalities or trends indicative of deteriorating health.

**7. Coding :** To perform this project to create patient health condition details and analysis of patient pulse .here we can perform a coding using python language.

## Program or source code:

```
rakesh.py - C:\Users\EEE\AppData\Local\Programs\Python\Python312\rakesh.py (3.12.3)
File Edit Format Run Options Window Help
import pandas as pd
s = []
f=[]
m=[]
hr=[]
bp=[]
sl=[]
m_age=[]
f_age=[]

def patient(patient_name, gender, age, heart_rate, blood_pressure, sugar_level):
    details = {
        'patient_name': patient_name,
        'gender': gender,
        'age': age,
        'heart_rate': heart_rate,
        'blood_pressure': blood_pressure,
        'sugar_level': sugar_level
    }
    s.append(details)
    if gender=="female":
        f.append(gender)
    else:
        m.append(gender)
n = int(input("Enter the number of patients: "))
for i in range(n):
    patient_name = input("Enter patient name: ")
    gender = input("Enter gender: ")
    age = int(input("Enter age: "))
    heart_rate = int(input("Enter heart rate: "))
    blood_pressure = int(input("Enter blood pressure: "))
    sugar_level = int(input("Enter sugar level: "))
    patient(patient_name, gender, age, heart_rate, blood_pressure, sugar_level)
for i in range(n):
    hr.append(s[i]['heart_rate'])
    bp.append(s[i]['blood_pressure'])
    sl.append(s[i]['sugar_level'])
```

```
rakesh.py - C:\Users\EEE\AppData\Local\Programs\Python\Python312\rakesh.py (3.12.3)
File Edit Format Run Options Window Help
heart_rate = int(input("Enter heart rate: "))
blood_pressure = int(input("Enter blood pressure: "))
sugar_level = int(input("Enter sugar level: "))
patient(patient_name, gender, age, heart_rate, blood_pressure, sugar_level)
for i in range(n):
    hr.append(s[i]['heart_rate'])
    bp.append(s[i]['blood_pressure'])
    sl.append(s[i]['sugar_level'])
for j in range(n):
    m_age.append(s[j]['age'])
    f_age.append(s[j]['age'])

sorted_s = sorted(s, key=lambda x: x['patient_name'])
for i in sorted_s:
    print(i['patient_name'])

# Display patient details in tabular format
print("patient_name\tgender\tage\theart_rate\tblood_pressure\sugar_levels")
for details in s:
    print(f"{details['patient_name']}\t\t{details['gender']}\t{details['age']}\t{details['heart_rate']}\t{details['blood_pressure']}\t{details['sugar_level']}")
df=pd.DataFrame(s)
print(df)
print((len(f)))
print((len(m)))
print(sorted_s)
print(max(hr))
print(min(hr))
print(max(bp))
print(min(bp))
print(max(sl))
print(min(sl))
print(max(m_age))
print(min(f_age))
```

**OUTPUT:**

```
IDLE Shell 3.12.3
File Edit Shell Debug Options Window Help
Python 3.12.3 (tags/v3.12.3:f6650f9, Apr 9 2024, 14:05:25) [MSC v.1938 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
= RESTART: C:\Users\EEE\AppData\Local\Programs\Python\Python312\rakesh.py
Enter the number of patients: 20
Enter patient name: srujana
Enter gender: female
Enter age: 20
Enter heart rate: 100
Enter blood pressure: 150
Enter sugar level: 120
Enter patient name: poornima
Enter gender: female
Enter age: 21
Enter heart rate: 100
Enter blood pressure: 120
Enter sugar level: 130
Enter patient name: rakesh
Enter gender: male
Enter age: 25
Enter heart rate: 100
Enter blood pressure: 150
Enter sugar level: 180
Enter patient name: dileep
Enter gender: male
Enter age: 26
Enter heart rate: 150
Enter blood pressure: 120
Enter sugar level: 130
Enter patient name: dipeeka
Enter gender: female
Enter age: 21
Enter heart rate: 100
Enter blood pressure: 120
Enter sugar level: 130
Enter patient name: kavya
Enter gender: female
Enter age: 29
Enter heart rate: 100
```

```
IDLE Shell 3.12.3
File Edit Shell Debug Options Window Help
Enter age: 29
Enter heart rate: 180
Enter blood pressure: 120
Enter sugar level: 130
Enter patient name: naresh
Enter gender: male
Enter age: 21
Enter heart rate: 100
Enter blood pressure: 120
Enter sugar level: 130
Enter patient name: suresh
Enter gender: male
Enter age: 27
Enter heart rate: 100
Enter blood pressure: 120
Enter sugar level: 150
Enter patient name: naveen
Enter gender: male
Enter age: 22
Enter heart rate: 100
Enter blood pressure: 120
Enter sugar level: 140
Enter patient name: sireesha
Enter gender: female
Enter age: 24
Enter heart rate: 100
Enter blood pressure: 120
Enter sugar level: 130
Enter patient name: madhuri
Enter gender: female
Enter age: 23
Enter heart rate: 120
Enter blood pressure: 130
Enter sugar level: 150
Enter patient name: ram
Enter gender: male
Enter age: 26
Enter heart rate: 100
```

```
IDLE Shell 3.12.3
File Edit Shell Debug Options Window Help
Enter blood pressure: 120
Enter sugar level: 130
Enter patient name: madhuri
Enter gender: female
Enter age: 23
Enter heart rate: 120
Enter blood pressure: 130
Enter sugar level: 150
Enter patient name: ram
Enter gender: male
Enter age: 26
Enter heart rate: 100
Enter blood pressure: 120
Enter sugar level: 150
Enter patient name: siri
Enter gender: female
Enter age: 22
Enter heart rate: 120
Enter blood pressure: 130
Enter sugar level: 180
Enter patient name: lokesh
Enter gender: male
Enter age: 19
Enter heart rate: 100
Enter blood pressure: 120
Enter sugar level: 180
Enter patient name: chari
Enter gender: male
Enter age: 28
Enter heart rate: 100
Enter blood pressure: 120
Enter sugar level: 180
Enter patient name: manoj
Enter gender: male
Enter age: 26
Enter heart rate: 25
Enter blood pressure: 100
Enter sugar level: 120
```

```
IDLE Shell 3.12.3
File Edit Shell Debug Options Window Help
Enter patient name: meghana
Enter gender: female
Enter age: 21
Enter heart rate: 100
Enter blood pressure: 150
Enter sugar level: 180
Enter patient name: sruthi
Enter gender: female
Enter age: 16
Enter heart rate: 100
Enter blood pressure: 120
Enter sugar level: 130
Enter patient name: vennela
Enter gender: female
Enter age: 28
Enter heart rate: 100
Enter blood pressure: 120
Enter sugar level: 130
Enter patient name: ramya
Enter gender: female
Enter age: 20
Enter heart rate: 120
Enter blood pressure: 100
Enter sugar level: 180
chari
dileep
dipeeka
kavya
lokesh
madhuri
manoj
meghana
naresh
naveen
poornima
rakesh
ram
ramya
```

```
IDLE Shell 3.12.3
File Edit Shell Debug Options Window Help

sireesha
siri
srujana
sruthi
suresh
vennela
patient_name gender age heart_rate blood_pressure sugar_levels
srujana female 20 100 150 120
poornima female 21 100 120 130
rakesh male 25 100 150 180
dileep male 26 150 120 130
dipeeka female 21 100 120 130
kavya female 29 180 120 130
naresh male 21 100 120 130
suresh male 27 100 120 150
naveen male 22 100 120 140
sireesha female 24 100 120 130
madhuri female 23 120 130 150
ram male 26 100 120 150
siri female 22 120 130 180
lokesh male 19 100 120 180
chari male 28 100 120 180
manoj male 26 25 100 120
meghana female 21 100 150 180
sruthi female 16 100 120 130
vennela female 28 100 120 130
ramya female 20 120 100 180
patient_name gender age heart_rate blood_pressure sugar_level
0 srujana female 20 100 150 120
1 poornima female 21 100 120 130
2 rakesh male 25 100 150 180
3 dileep male 26 150 120 130
4 dipeeka female 21 100 120 130
5 kavya female 29 180 120 130
6 naresh male 21 100 120 130
7 suresh male 27 100 120 150
8 naveen male 22 100 120 140
9 sireesha female 24 100 120 130
```



```
IDLE Shell 3.12.3
File Edit Shell Debug Options Window Help
1 poornima female 21 100 120 130
2 rakesh male 25 100 150 180
3 dileep male 26 150 120 130
4 dipeeka female 21 100 120 130
5 kavya female 29 180 120 130
6 naresh male 21 100 120 130
7 suresh male 27 100 120 150
8 naveen male 22 100 120 140
9 sireesha female 24 100 120 130
10 madhuri female 23 120 130 150
11 ram male 26 100 120 150
12 siri female 22 120 130 180
13 lokesh male 19 100 120 180
14 chari male 28 100 120 180
15 manoj male 26 25 100 120
16 meghana female 21 100 150 180
17 sruthi female 16 100 120 130
18 vennela female 28 100 120 130
19 ramya female 20 120 100 180
(11)
(9)
[{'patient_name': 'chari', 'gender': 'male', 'age': 28, 'heart_rate': 100, 'blood_pressure': 120, 'sugar_level': 180}, {'patient_name': 'dileep', 'gender': 'male', 'age': 26, 'heart_rate': 150, 'blood_pressure': 120, 'sugar_level': 130}, {'patient_name': 'dipeeka', 'gender': 'female', 'age': 21, 'heart_rate': 100, 'blood_pressure': 120, 'sugar_level': 130}, {'patient_name': 'kavya', 'gender': 'female', 'age': 29, 'heart_rate': 180, 'blood_pressure': 120, 'sugar_level': 130}, {'patient_name': 'lokesh', 'gender': 'male', 'age': 19, 'heart_rate': 100, 'blood_pressure': 120, 'sugar_level': 180}, {'patient_name': 'madhuri', 'gender': 'female', 'age': 23, 'heart_rate': 120, 'blood_pressure': 130, 'sugar_level': 150}, {'patient_name': 'manoj', 'gender': 'male', 'age': 26, 'heart_rate': 25, 'blood_pressure': 100, 'sugar_level': 120}, {'patient_name': 'meghana', 'gender': 'female', 'age': 21, 'heart_rate': 100, 'blood_pressure': 150, 'sugar_level': 180}, {'patient_name': 'naresh', 'gender': 'male', 'age': 21, 'heart_rate': 100, 'blood_pressure': 120, 'sugar_level': 130}, {'patient_name': 'naveen', 'gender': 'male', 'age': 22, 'heart_rate': 100, 'blood_pressure': 120, 'sugar_level': 140}, {'patient_name': 'poornima', 'gender': 'female', 'age': 21, 'heart_rate': 100, 'blood_pressure': 120, 'sugar_level': 130}, {'patient_name': 'rakesh', 'gender': 'male', 'age': 25, 'heart_rate': 100, 'blood_pressure': 150, 'sugar_level': 180}, {'patient_name': 'ram', 'gender': 'male', 'age': 26, 'heart_rate': 100, 'blood_pressure': 120, 'sugar_level': 150}, {'patient_name': 'ramya', 'gender': 'female', 'age': 20, 'heart_rate': 120, 'blood_pressure': 100, 'sugar_level': 180}, {'patient_name': 'sireesha', 'gender': 'female', 'age': 24, 'heart_rate': 100, 'blood_pressure': 120, 'sugar_level': 130}, {'patient_name': 'siri', 'gender': 'female', 'age': 22, 'heart_rate': 120, 'blood_pressure': 130, 'sugar_level': 180}, {'patient_name': 'sruthi', 'gender': 'female', 'age': 16, 'heart_rate': 100, 'blood_pressure': 120, 'sugar_level': 130}, {'patient_name': 'suresh', 'gender': 'male', 'age': 27, 'heart_rate': 100, 'blood_pressure': 120, 'sugar_level': 150}, {'patient_name': 'vennela', 'gender': 'female', 'age': 28, 'heart_rate': 100, 'blood_pressure': 120, 'sugar_level': 130}]
Ln: 199 Col: 0
```

```
IDLE Shell 3.12.3
File Edit Shell Debug Options Window Help
12 siri female 22 120 130 180
13 lokesh male 19 100 120 180
14 chari male 28 100 120 180
15 manoj male 26 25 100 120
16 meghana female 21 100 150 180
17 sruthi female 16 100 120 130
18 vennela female 28 100 120 130
19 ramya female 20 120 100 180
(11)
(9)
[{'patient_name': 'chari', 'gender': 'male', 'age': 28, 'heart_rate': 100, 'blood_pressure': 120, 'sugar_level': 180}, {'patient_name': 'dileep', 'gender': 'male', 'age': 26, 'heart_rate': 150, 'blood_pressure': 120, 'sugar_level': 130}, {'patient_name': 'dipeeka', 'gender': 'female', 'age': 21, 'heart_rate': 100, 'blood_pressure': 120, 'sugar_level': 130}, {'patient_name': 'kavya', 'gender': 'female', 'age': 29, 'heart_rate': 180, 'blood_pressure': 120, 'sugar_level': 130}, {'patient_name': 'lokesh', 'gender': 'male', 'age': 19, 'heart_rate': 100, 'blood_pressure': 120, 'sugar_level': 180}, {'patient_name': 'madhuri', 'gender': 'female', 'age': 23, 'heart_rate': 120, 'blood_pressure': 130, 'sugar_level': 150}, {'patient_name': 'manoj', 'gender': 'male', 'age': 26, 'heart_rate': 25, 'blood_pressure': 100, 'sugar_level': 120}, {'patient_name': 'meghana', 'gender': 'female', 'age': 21, 'heart_rate': 100, 'blood_pressure': 150, 'sugar_level': 180}, {'patient_name': 'naresh', 'gender': 'male', 'age': 21, 'heart_rate': 100, 'blood_pressure': 120, 'sugar_level': 130}, {'patient_name': 'naveen', 'gender': 'male', 'age': 22, 'heart_rate': 100, 'blood_pressure': 120, 'sugar_level': 140}, {'patient_name': 'poornima', 'gender': 'female', 'age': 21, 'heart_rate': 100, 'blood_pressure': 120, 'sugar_level': 130}, {'patient_name': 'rakesh', 'gender': 'male', 'age': 25, 'heart_rate': 100, 'blood_pressure': 150, 'sugar_level': 180}, {'patient_name': 'ram', 'gender': 'male', 'age': 26, 'heart_rate': 100, 'blood_pressure': 120, 'sugar_level': 150}, {'patient_name': 'ramya', 'gender': 'female', 'age': 20, 'heart_rate': 120, 'blood_pressure': 100, 'sugar_level': 180}, {'patient_name': 'sireesha', 'gender': 'female', 'age': 24, 'heart_rate': 100, 'blood_pressure': 120, 'sugar_level': 130}, {'patient_name': 'siri', 'gender': 'female', 'age': 22, 'heart_rate': 120, 'blood_pressure': 130, 'sugar_level': 180}, {'patient_name': 'sruthi', 'gender': 'female', 'age': 16, 'heart_rate': 100, 'blood_pressure': 120, 'sugar_level': 130}, {'patient_name': 'suresh', 'gender': 'male', 'age': 27, 'heart_rate': 100, 'blood_pressure': 120, 'sugar_level': 150}, {'patient_name': 'vennela', 'gender': 'female', 'age': 28, 'heart_rate': 100, 'blood_pressure': 120, 'sugar_level': 130}]
180
25
150
100
180
120
29
16
>>>
Ln: 199 Col: 0
```

## **Explanation:**

For this project of patient pulse analysis, we can analyze the health status of the patients and their problems.

**1. User interaction:** First user can analyze the patient details, gender, age, heart rate, blood pressure, sugar levels

**2. How to approach:** For analyzing the patient pulse analysis, we approach our mentors for the process and they guide us how to analyze patient pulse analysis. In that guidance we create a source or code to make details of the patient's health condition.

## **Conclusion**

Regular and systematic pulse analysis is vital for the early detection and management of various health conditions. This essential skill for healthcare providers requires minimal equipment and offers immediate, valuable information about a patient's cardiovascular status.