Part-1 Jothiswaran.P

Q1.  
def factorial(n):  
 result = 1  
 for i in range(1, n + 1):  
 result \*= i  
 return result  
  
print(factorial(5))

Q2.   
students = [("Aarav", 80), ("Sanya", 65), ("Meera", 92), ("Rohan", 55)]  
  
high\_scorers = [name for name, score in students if score > 75]  
print("Students scoring above 75:", high\_scorers)  
avg\_score = sum(score for \_, score in students) / len(students)  
print("Average score:", avg\_score)

Part-2

Q3.

class BankAccount:  
 def \_\_init\_\_(self, holder\_name, balance=0):  
 self.holder\_name = holder\_name  
 self.balance = balance  
  
 def deposit(self, amount):  
 self.balance += amount  
 print(f"Deposited {amount}. New balance: {self.balance}")  
  
 def withdraw(self, amount):  
 if amount > self.balance:  
 raise ValueError("Insufficient funds!") **#exception** self.balance -= amount  
 print(f"Withdrew {amount}. New balance: {self.balance}")

Q4. SavingsAccount  
class SavingsAccount(BankAccount):  
 def \_\_init\_\_(self, holder\_name, balance=0, interest\_rate=0.02):  
 super().\_\_init\_\_(holder\_name, balance)  
 self.interest\_rate = interest\_rate

def apply\_interest(self):  
 interest = self.balance \* self.interest\_rate  
 self.balance += interest  
 print(f"Interest applied: {interest}. New balance: {self.balance}")  
  
  
acc = SavingsAccount("Aarav", 1000, 0.05)  
acc.apply\_interest()

Part-3

Q5.

import pandas as pd  
df = pd.read\_csv("orders.csv")  
  
df['CustomerName']=df['CustomerName'].fillna('Unknown')

df['Quantity']=df['Quantity'].fillna(0)

df['Price']=df['Price'].fillna(0)  
df['TotalAmount'] = df['Quantity'] \* df['Price']  
  
df.to\_csv("orders\_cleaned.csv", index=False)  
print(df)

Part-4

Q6.  
import json  
with open("inventory.json") as f:  
 inventory = json.load(f)  
  
  
for item in inventory:  
 item['status'] = 'In Stock' if item['stock'] > 0 else 'Out of Stock'  
  
  
with open("inventory\_updated.json", "w") as f:  
 json.dump(inventory, f, indent=4)  
  
print("Updated inventory saved to inventory\_updated.json")

Part-5

Q7.   
import numpy as np  
import pandas as pd  
  
scores = np.random.randint(35, 101, 20)  
  
above\_75 = np.sum(scores > 75)  
  
mean\_score = np.mean(scores)  
std\_dev = np.std(scores)  
  
print("Scores:", scores)  
print("Students scoring above 75:", above\_75)  
print("Mean:", mean\_score, "Std Dev:", std\_dev)  
  
  
df = pd.DataFrame({'Scores': scores})  
df.to\_csv("scores.csv", index=False)