

AI ASSISTED CODING

ASSIGNMENT – 6.3

COURSE : B.TECH\CSE

SPECIALISATION : AIML

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COURSE : AI ASSISTED CODING

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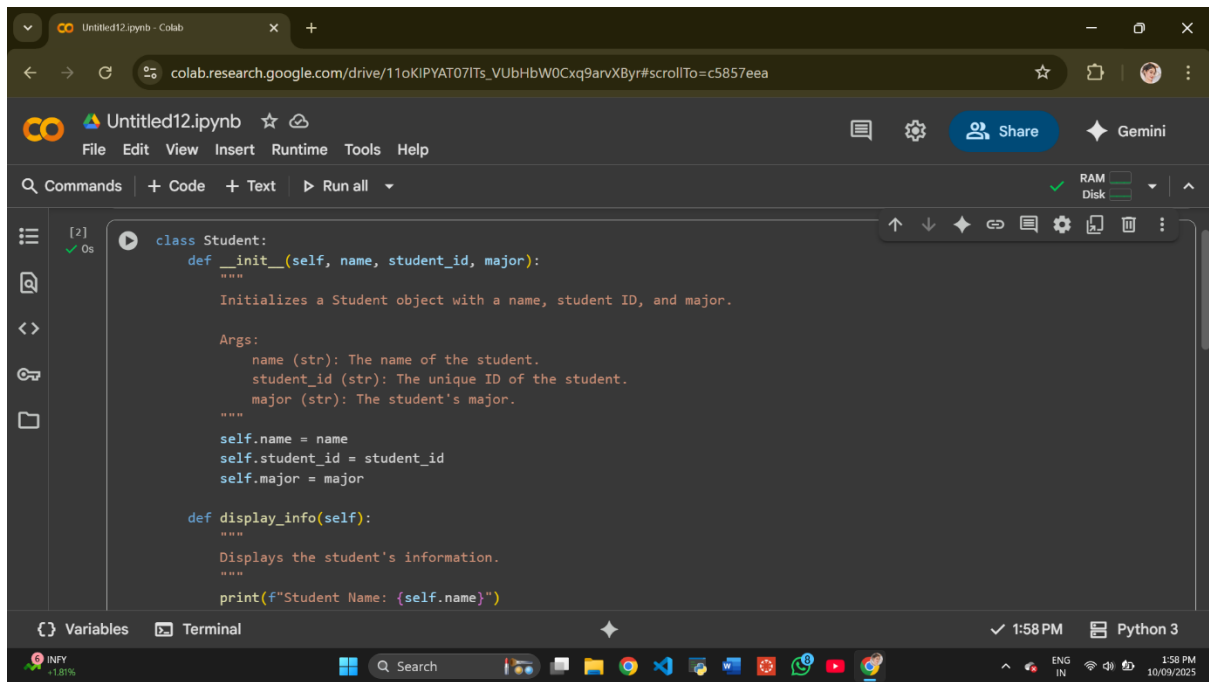
TASK DESCRIPTION#1 :

Use google gemini to generate a code to complete a Student class with attributes and a method

PROMPT :

Develop a python code to generate a code to complete a Student class with attributes and a method

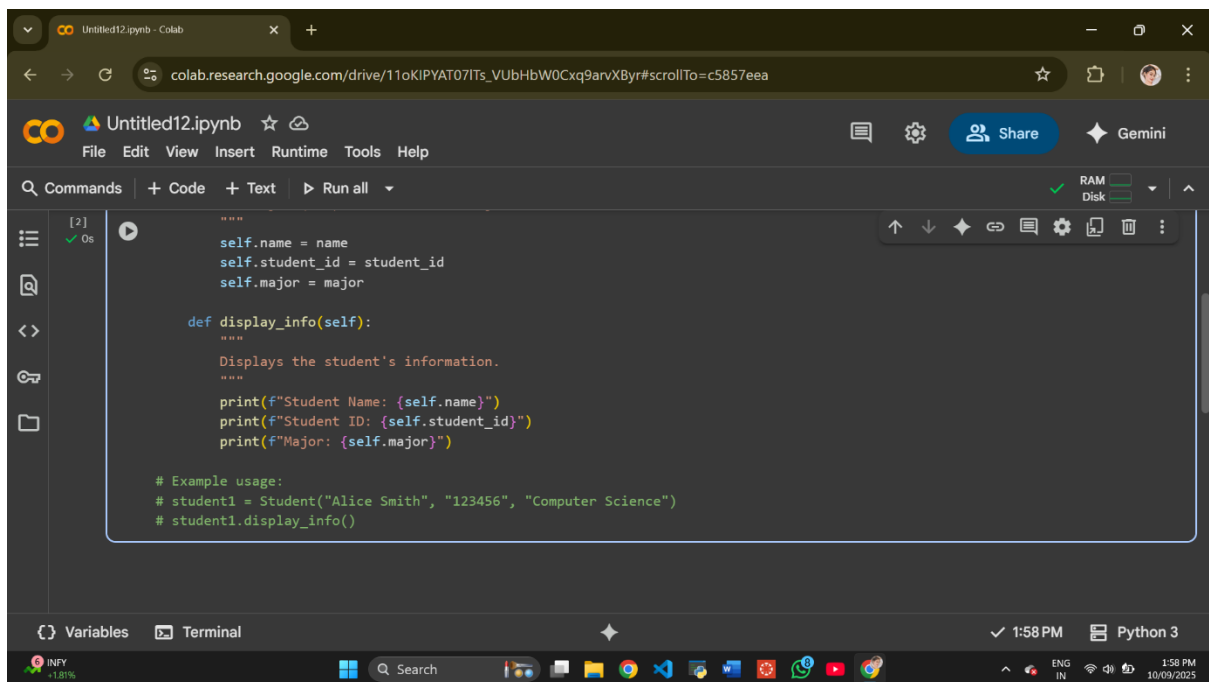
SCREENSHOT AND EXPECTED OUTPUT :



```
class Student:
    def __init__(self, name, student_id, major):
        """
        Initializes a Student object with a name, student ID, and major.

        Args:
            name (str): The name of the student.
            student_id (str): The unique ID of the student.
            major (str): The student's major.
        """
        self.name = name
        self.student_id = student_id
        self.major = major

    def display_info(self):
        """
        Displays the student's information.
        """
        print(f"Student Name: {self.name}")
```



```
self.name = name
self.student_id = student_id
self.major = major

def display_info(self):
    """
    Displays the student's information.
    """
    print(f"Student Name: {self.name}")
    print(f"Student ID: {self.student_id}")
    print(f"Major: {self.major}")

# Example usage:
# student1 = Student("Alice Smith", "123456", "Computer Science")
# student1.display_info()
```

EXPLANATION :

- `class Student:` : This line declares the beginning of the `Student` class definition.
- `__init__(self, name, student_id, major):` : This is the constructor method. It's called when you create a new `Student` object.
 - `self` : Refers to the instance of the class itself.
 - `name`, `student_id`, `major` : These are the parameters that you pass when creating a `Student` object to initialize its attributes.
 - Inside `__init__`, `self.name = name`, `self.student_id = student_id`, and `self.major = major` assign the values passed as arguments to the object's attributes.
- `display_info(self):` : This is a method of the `Student` class.
 - `self` : Again, refers to the instance of the class.
 - This method prints the student's name, ID, and major using f-strings for formatted output.

- `self` : Refers to the instance of the class itself.
- `name`, `student_id`, `major` : These are the parameters that you pass when creating a `Student` object to initialize its attributes.
- Inside `__init__`, `self.name = name`, `self.student_id = student_id`, and `self.major = major` assign the values passed as arguments to the object's attributes.
- `display_info(self)` : This is a method of the `Student` class.
 - `self` : Again, refers to the instance of the class.
 - This method prints the student's name, ID, and major using f-strings for formatted output.

In essence, this class provides a blueprint for creating `Student` objects, each with their own name, student ID, and major, and a way to display that information.

Task Description#2

• use google gemini to generate a python code to complete a function that prints the first 10 multiples of a number using a loop

PROMPT :

Develop a python code to generate a python code to complete a function that prints the first 10 multiples of a number using a loop

SCREENSHOT AND EXPECTED OUTPUT :

```
def print_multiples(number):
    """
    Prints the first 10 multiples of a given number.

    Args:
        number: The number for which to print multiples.
    """
    print(f"Multiples of {number}:")
    for i in range(1, 11):
        print(number * i)

# Example usage:
# print_multiples(5)
```

EXPLANATION :

- `def print_multiples(number):` : This line defines the function named `print_multiples` that takes one argument, `number`.
- `""" ... """` : This is a docstring, which explains what the function does, its arguments, and what it returns (although this function doesn't explicitly return anything).
- `print(f"Multiples of {number}:")` : This line prints a header indicating the number for which the multiples will be displayed.
- `for i in range(1, 11):` : This is a `for` loop that iterates through a sequence of numbers from 1 up to (but not including) 11. So, the values of `i` will be 1, 2, 3, ..., 10.
- `print(number * i)` : Inside the loop, this line calculates the product of the input `number` and the current value of `i`, and then prints the result. This effectively prints each of the first 10 multiples of the given number.

summary, the function takes a number as input and then prints the result of multiplying that number by each integer from 1 to 10.

Task Description#3

- Use google gemini to generate a python code to write nested if-elif-else conditionals to classify age groups

PROMPT :

Develop a python code to generate a python code to write nested if-elif-else conditionals to classify age groups

SCREENSHOT AND EXPECTED OUTPUT :

```
def classify_age_group(age):  
    """  
    Classifies an age into a specific age group using nested if-elif-else conditionals.  
  
    Args:  
        age: The age to classify.  
  
    Returns:  
        A string representing the age group.  
    """  
    if age < 0:  
        return "Invalid Age"  
    else:  
        if age < 13:  
            return "Child"  
        elif age < 20:  
            return "Teenager"  
        elif age < 60:  
            return "Middle-aged"  
        else:  
            return "Senior"
```

```
else:  
    return "Senior"  
  
# Example usage:  
# age1 = 8  
# print(f"Age {age1}: {classify_age_group(age1)}")  
  
# age2 = 16  
# print(f"Age {age2}: {classify_age_group(age2)}")  
  
# age3 = 45  
# print(f"Age {age3}: {classify_age_group(age3)}")  
  
# age4 = 70  
# print(f"Age {age4}: {classify_age_group(age4)}")  
  
# age5 = -5  
# print(f"Age {age5}: {classify_age_group(age5)}")
```

EXPLANATION :

★ Certainly! The code defines a Python class named `Student`.

- `class Student:` : This line declares the beginning of the `Student` class definition.
- `__init__(self, name, student_id, major):` : This is the constructor method. It's called when you create a new `Student` object.
 - `self` : Refers to the instance of the class itself.
 - `name, student_id, major` : These are the parameters that you pass when creating a `Student` object to initialize its attributes.
 - Inside `__init__`, `self.name = name`, `self.student_id = student_id`, and `self.major = major` assign the values passed as arguments to the object's attributes.
- `display_info(self):` : This is a method of the `Student` class.
 - `self` : Again, refers to the instance of the class.
 - This method prints the student's name, ID, and major using f-strings for formatted output.

- `__init__(self, name, student_id, major):` : This is the constructor method. It's called when you create a new `Student` object.
 - `self` : Refers to the instance of the class itself.
 - `name, student_id, major` : These are the parameters that you pass when creating a `Student` object to initialize its attributes.
 - Inside `__init__`, `self.name = name`, `self.student_id = student_id`, and `self.major = major` assign the values passed as arguments to the object's attributes.
- `display_info(self):` : This is a method of the `Student` class.
 - `self` : Again, refers to the instance of the class.
 - This method prints the student's name, ID, and major using f-strings for formatted output.

In essence, this class provides a blueprint for creating `Student` objects, each with their own name, student ID, and major, and a way to display that information.

Task Description#4

Use google gemini to generate a python code to write a `sum_to_n()` function to calculate sum of first n numbers

PROMPT :

Develop a a python code to write a `sum_to_n()` function to calculate sum of first n numbers

SCREENSHOT AND EXPECTED OUTPUT :

```
def sum_to_n(n):  
    """  
    Calculates the sum of the first n positive integers.  
  
    Args:  
        n: The number of positive integers to sum.  
  
    Returns:  
        The sum of the first n positive integers.  
    """  
    if n < 1:  
        return 0 # Sum of no positive integers is 0  
    else:  
        return n * (n + 1) // 2 # Using the formula for the sum of an arithmetic series  
  
# Example usage:  
# print(f"The sum of the first 10 numbers is: {sum_to_n(10)}")  
# print(f"The sum of the first 5 numbers is: {sum_to_n(5)}")
```

```

else:
    return n * (n + 1) // 2 # Using the formula for the sum of an arithmetic series

# Example usage:
# print(f"The sum of the first 10 numbers is: {sum_to_n(10)}")
# print(f"The sum of the first 5 numbers is: {sum_to_n(5)}")
# print(f"The sum of the first 0 numbers is: {sum_to_n(0)}")
# print(f"The sum of the first -5 numbers is: {sum_to_n(-5)}")

```

EXPLANATION :

- `__init__(self, name, student_id, major):` : This is the constructor method. It's called when you create a new `Student` object.
 - `self` : Refers to the instance of the class itself.
 - `name, student_id, major` : These are the parameters that you pass when creating a `Student` object to initialize its attributes.
 - Inside `__init__`, `self.name = name`, `self.student_id = student_id`, and `self.major = major` assign the values passed as arguments to the object's attributes.
- `display_info(self):` : This is a method of the `Student` class.
 - `self` : Again, refers to the instance of the class.
 - This method prints the student's name, ID, and major using f-strings for formatted output.

In essence, this class provides a blueprint for creating `Student` objects, each with their own name, student ID, and major, and a way to display that information.

- `def sum_to_n(n):` : This line defines the function named `sum_to_n` which takes one argument, `n`.
- `""" ... """` : This is the docstring explaining what the function does, its arguments, and what it returns.
- `if n < 1:` : This `if` condition checks if the input `n` is less than 1.
 - `return 0` : If `n` is less than 1 (meaning it's zero or a negative number), the function returns 0, as there are no positive integers to sum in this case.
- `else:` : If the `n` is not less than 1 (meaning it's a positive integer), the code in this `else` block is executed.
 - `return n * (n + 1) // 2` : This line calculates the sum of the first `n` positive integers using the mathematical formula for the sum of an arithmetic series.

Task Description#5

Use google gemini to generate a python code to build a BankAccount class with deposit, withdraw, and balance methods

PROMPT :

Develop a python code to build a BankAccount class with deposit, withdraw, and balance methods

SCREENSHOT AND EXPECTED OUTPUT :

```

class BankAccount:
    def __init__(self, account_holder, initial_balance=0):
        """
        Initializes a BankAccount object.

        Args:
            account_holder (str): The name of the account holder.
            initial_balance (float): The initial balance of the account (default is 0).
        """
        self.account_holder = account_holder
        self.balance = initial_balance

    def deposit(self, amount):
        """
        Deposits a specified amount into the account.

        Args:

```

```

    Args:
        amount (float): The amount to deposit.
    """
    if amount > 0:
        self.balance += amount
        print(f"Deposit of {amount} successful. New balance: {self.balance}")
    else:
        print("Invalid deposit amount. Amount must be positive.")

def withdraw(self, amount):
    """
    Withdraws a specified amount from the account.

    Args:
        amount (float): The amount to withdraw.
    """

```

```

        if 0 < amount <= self.balance:
            self.balance -= amount
            print(f"Withdrawal of {amount} successful. New balance: {self.balance}")
        elif amount > self.balance:
            print("Insufficient funds.")
        else:
            print("Invalid withdrawal amount. Amount must be positive.")

def get_balance(self):
    """
    Returns the current balance of the account.

    Returns:
        float: The current account balance.
    """

```

```

    Returns the current balance of the account.

    Returns:
        float: The current account balance.
    """
    return self.balance

# Example usage:
# account1 = BankAccount("John Doe", 1000)
# print(f"Initial balance: {account1.get_balance()}")
# account1.deposit(500)
# account1.withdraw(200)
# account1.withdraw(1500) # Trying to withdraw more than balance
# print(f"Final balance: {account1.get_balance()}")

```

EXPLANATION :

- `class BankAccount:` : This line starts the definition of the `BankAccount` class.
- `__init__(self, account_holder, initial_balance=0):` : This is the constructor. It's called when you create a new `BankAccount` object.
 - `self` : Refers to the instance of the class.
 - `account_holder` (str): The name of the person who owns the account. This is a required argument.
 - `initial_balance` (float): The starting amount of money in the account. It has a default value of 0 if you don't provide it.
 - Inside the constructor, `self.account_holder = account_holder` and `self.balance = initial_balance` store the provided values as attributes of the object.
- `deposit(self, amount):` : This method is used to add money to the account.
 - `self` : Refers to the object instance.
 - `amount` (float): The amount of money to deposit.

- `withdraw(self, amount):` : This method is used to take money out of the account.
 - `self` : Refers to the object instance.
 - `amount` (float): The amount of money to withdraw.
 - It has a conditional statement:
 - `if 0 < amount <= self.balance:` : This checks if the amount is positive AND less than or equal to the current `self.balance` . If both are true, it subtracts the `amount` from the `self.balance` and prints a success message.
 - `elif amount > self.balance:` : If the previous condition is false, this checks if the `amount` is greater than the current `self.balance` (insufficient funds). If true, it prints an "Insufficient funds" message.
 - `else:` : If neither of the above conditions is met (meaning the amount is zero or negative), it prints an "Invalid withdrawal amount" message.
- `get_balance(self):` : This method is used to check the current balance of the account.