

| SCHOOL OF COMPUTER SCIENCE AND ARTIFICIAL INTELLIGENCE                           |                                                                                                                                                                                                                                                        | DEPARTMENT OF COMPUTER SCIENCE ENGINEERING |                           |
|----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|---------------------------|
| Program Name: B. Tech                                                            |                                                                                                                                                                                                                                                        | Assignment Type: Lab                       | Academic Year:2025-2026   |
| Course Coordinator Name                                                          |                                                                                                                                                                                                                                                        | Venkataramana Veeramsetty                  |                           |
| Instructor(s) Name                                                               |                                                                                                                                                                                                                                                        | Dr. V. Venkataramana (Co-ordinator)        |                           |
|                                                                                  |                                                                                                                                                                                                                                                        | Dr. T. Sampath Kumar                       |                           |
|                                                                                  |                                                                                                                                                                                                                                                        | Dr. Pramoda Patro                          |                           |
|                                                                                  |                                                                                                                                                                                                                                                        | Dr. Brij Kishor Tiwari                     |                           |
|                                                                                  |                                                                                                                                                                                                                                                        | Dr.J.Ravichander                           |                           |
|                                                                                  |                                                                                                                                                                                                                                                        | Dr. Mohammand Ali Shaik                    |                           |
|                                                                                  |                                                                                                                                                                                                                                                        | Dr. Anirodh Kumar                          |                           |
|                                                                                  |                                                                                                                                                                                                                                                        | Mr. S.Naresh Kumar                         |                           |
|                                                                                  |                                                                                                                                                                                                                                                        | Dr. RAJESH VELPULA                         |                           |
|                                                                                  |                                                                                                                                                                                                                                                        | Mr. Kundhan Kumar                          |                           |
|                                                                                  |                                                                                                                                                                                                                                                        | Ms. Ch.Rajitha                             |                           |
|                                                                                  |                                                                                                                                                                                                                                                        | Mr. M Prakash                              |                           |
|                                                                                  |                                                                                                                                                                                                                                                        | Mr. B.Raju                                 |                           |
|                                                                                  |                                                                                                                                                                                                                                                        | Intern 1 (Dharma teja)                     |                           |
|                                                                                  |                                                                                                                                                                                                                                                        | Intern 2 (Sai Prasad)                      |                           |
|                                                                                  |                                                                                                                                                                                                                                                        | Intern 3 (Sowmya)                          |                           |
|                                                                                  |                                                                                                                                                                                                                                                        | NS_2 ( Mounika)                            |                           |
| Course Code                                                                      | 24CS002PC215                                                                                                                                                                                                                                           | Course Title                               | AI Assisted Coding        |
| Year/Sem                                                                         | II/I                                                                                                                                                                                                                                                   | Regulation                                 | R24                       |
| Date and Day of Assignment                                                       | Week10 - Thursday                                                                                                                                                                                                                                      | Time(s)                                    |                           |
| Duration                                                                         | 2 Hours                                                                                                                                                                                                                                                | Applicable to Batches                      |                           |
| AssignmentNumber:19.4(Present assignment number)/24(Total number of assignments) |                                                                                                                                                                                                                                                        |                                            |                           |
|                                                                                  |                                                                                                                                                                                                                                                        |                                            |                           |
| Q.No.                                                                            | Question                                                                                                                                                                                                                                               |                                            | Expected Time to complete |
| 1                                                                                | <b>Lab 19 – Code Translation: Converting Between Programming Languages</b><br><b>Lab Objectives:</b> <ul style="list-style-type: none"> <li>Understand how AI tools can assist in translating code between different programming languages.</li> </ul> |                                            | Week10 - Thursday         |

- Learn to verify correctness and functionality after translation.
- Explore syntactic and semantic differences between languages (e.g., Python, Java, C++).
- Practice debugging and optimizing AI-translated code.

### Task 1: Translate a Simple Program (Python → JavaScript)

- **Instructions:**

- Write a Python function `print_numbers()` that prints the first 10 natural numbers using a loop.
- Translate the function into JavaScript as a reusable function `printNumbers()`.
- Call the function in both languages to display results.

- **Expected Output:**

- 1
- 2
- 3
- ...10

#### Prompt :

Translate the following Python code of 1st 10 natural numbers into equivalent JavaScript code. The JavaScript version should have the same logic, output, and structure.(

Write a python code for 1st 10 natural numbers and then proceed with translation)

```
# Python code for the first 10 natural numbers
for i in range(1, 11):
    print(i)

1
2
3
4
5
6
7
8
9
10
```

Here is the equivalent JavaScript code:

```
%run_js
// JavaScript code for the first 10 natural numbers
for (let i = 1; i <= 10; i++) {
    console.log(i);
}
```

File "/tmp/ipynthon-input-2739535306.py", line 2  
 // JavaScript code for the first 10 natural numbers  
 ^  
 SyntaxError: invalid syntax

Next steps: [Explain error](#)

### Task 2: Convert Conditional Statements (Java → Python)

- **Instructions:**

- Write a Java method checkNumber(int num) that checks if a number is positive, negative, or zero.
- Translate the method into a Python function check\_number(num).
- Call the function/method with different inputs and compare outputs.
- **Expected Output:**
  - Input: -5 → Output: The number is negative
  - Input: 0 → Output: The number is zero
  - Input: 7 → Output: The number is positive

Prompt :

Write a java code to check whether user input number is positive, negative or zero. Convert java code into python

```
+%Writefile NumberCheck.java
import java.util.Scanner;

public class NumberCheck {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        System.out.print("Enter a number: ");
        double number = scanner.nextDouble();

        if (number > 0) {
            System.out.println("The number is positive.");
        } else if (number < 0) {
            System.out.println("The number is negative.");
        } else {
            System.out.println("The number is zero.");
        }

        scanner.close();
    }
}

Writing NumberCheck.java
```

Here is the equivalent Python code:

```
# Python code to check if a number is positive, negative, or zero
number = float(input("Enter a number: "))
if number > 0:
    print("The number is positive.")
elif number < 0:
    print("The number is negative.")
else:
    print("The number is zero.")

Enter a number: 2
The number is positive.
```

### Task 3: Translate Recursive Function (Python → C++)

- **Instructions:**
  - Write a Python function factorial(n) that calculates factorial of a number using recursion.
  - Translate the same into a C++ function int factorial(int n).
  - Call the function in both languages with inputs 5 and 0.
- **Expected Output:**
  - **Input: 5 → Output: Factorial = 120**
  - **Input: 0 → Output: Factorial = 1**

Prompt : Write a recursive function in python to calculate factorial of a

number .Convert the code into c++code

```
# Recursive function to calculate factorial in Python
def factorial(n):
    if n == 0:
        return 1
    else:
        return n * factorial(n-1)

# Example usage
num = 5
print(f"The factorial of {num} is {factorial(num)}")

The factorial of 5 is 120
```

Here is the equivalent C++ code:

```
%writefile main.cpp
#include <iostream>

// Recursive function to calculate factorial in C++
long long factorial(int n) {
    if (n == 0)
        return 1;
    else
        return n * factorial(n - 1);
}

int main() {
    int num = 5;
    std::cout << "The factorial of " << num << " is " << factorial(num) << std::endl;
    return 0;
}
```

Writing main.cpp

#### Task 4: Data Structures with Functions (JavaScript → Python)

- **Instructions:**

- Write a JavaScript function printStudents(students) that takes an array of student names and prints each name.
- Translate it into a Python function print\_students(students) using a list.
- Test both functions with sample student names.

- **Expected Output:**

- Student List:
- Alice
- Bob
- Charlie

Prompt :

Write a javascript program to list student names and print them , convert the java script function into python using lists

```
%run_js
// JavaScript program to list and print student names
let studentNames = ["Alice", "Bob", "Charlie", "David"];

console.log("Student Names:");
for (let i = 0; i < studentNames.length; i++) {
  console.log(studentNames[i]);
}

File "/tmp/ipython-input-995876762.py", line 2
// JavaScript program to list and print student names
^
SyntaxError: invalid syntax

Next steps: Explain error

Here is the equivalent Python code:

# Python program to list and print student names using lists
student_names = ["Alice", "Bob", "Charlie", "David"]

print("Student Names:")
for name in student_names:
  print(name)

Student Names:
Alice
Bob
Charlie
David
```

## Task 5: Class & Object Translation (Python → Java)

- **Instructions:**

1. Write a **Python class** Car with attributes: brand, model, year.
2. Add a **method** display\_details() that prints car details.
3. Translate the same into a **Java class** Car with attributes and a **method** displayDetails().
4. Create an object in both languages and call the method.

- **Expected Output:**

- Car Details:
- Brand: Toyota
- Model: Corolla
- Year: 2020

Prompt : Write a python class to represent car with attributes and method to display details. Now , trnslate the python class into java

```
# Python class to represent a car
class Car:
    def __init__(self, make, model, year):
        self.make = make
        self.model = model
        self.year = year

    def display_details(self):
        print(f"Make: {self.make}, Model: {self.model}, Year: {self.year}")

# Example usage
my_car = Car("Toyota", "Corolla", 2020)
my_car.display_details()
```

Make: Toyota, Model: Corolla, Year: 2020

Here is the equivalent Java code:

↳ Gemini

```
%Writefile Car.java
// Java class to represent a car
public class Car {
    String make;
    String model;
    int year;

    // Constructor
    public Car(String make, String model, int year) {
        this.make = make;
        this.model = model;
        this.year = year;
    }

    // Method to display details
    public void displayDetails() {
        System.out.println("Make: " + this.make + ", Model: " + this.model + ", Year: " + this.year);
    }

    // Main method for example usage (optional, but good for testing)
    public static void main(String[] args) {
        Car myCar = new Car("Honda", "Civic", 2023);
        myCar.displayDetails();
    }
}
```

Writing Car.java

### ✓ Deliverables (For All Tasks)

1. AI-generated prompts for code and test case generation.
2. At least 3 assert test cases for each task.
3. AI-generated initial code and execution screenshots.
4. Analysis of whether code passes all tests.
5. Improved final version with inline comments and explanation.
6. Compiled report (Word/PDF) with prompts, test cases, assertions, code, and output.