

SCHOOL OF COMPUTER SCIENCE AND ARTIFICIAL INTELLIGENCE		DEPARTMENT OF COMPUTER SCIENCE ENGINEERING	
Program Name: B. Tech		Assignment Type: Lab	Academic Year:2025-2026
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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	
<b>AssignmentNumber:</b> 19.4(Present assignment number)/24(Total number of assignments)			

Q.No.	Question	Expected Time to complete
1	<p><b>Lab 19 – Code Translation: Converting Between Programming Languages</b></p> <p><b>Lab Objectives:</b></p> <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/ipython-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, negeative or zero. Convert java code into python

The screenshot shows a terminal window with two parts. The top part displays Java code named `NumberCheck.java`. The bottom part shows the equivalent Python code and its execution output.

```
+ %> 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:

```
❶ # 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.")

❷ 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 calucate factorial of a

number .Convert the code into c++code

```
1] 0s # 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:

```
1] 0s %%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-995076762.py", line 2
    ^
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

The screenshot shows a code editor window with two panes. The left pane displays Python code for a `Car` class, and the right pane shows the equivalent Java code generated by Gemini. The Python code is as follows:

```
# 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
```

Below the Python code, a note says "Here is the equivalent Java code:" followed by the generated Java code:

```
❸ Gemini
❹ %%writefile Car.java
❺ // 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();
    }
}

❻ 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.