



## COMSATS University Islamabad, Lahore Campus

### Assignment #1 – SPRING 2025

Course Title:	Parallel and Distributed Computing				Course Code:	CSC334	Credit Hours:	3(2,1)
Course Instructor:	Dr. Hasan Jamal				Programme Name:	BCS		
Semester:	6 <sup>th</sup>	Batch:	FA22	Section:	B, C	Date:	04/03/2025	
Deadline:	05/03/2025				Maximum Marks:		10	

#### Important Instructions / Guidelines:

- Submit the assignment, in class, before the start of the lecture.
- Strictly handwritten. Typed assignment will result in zero marks.
- No late submission allowed.
- Any solution found to be copied would strictly result in zero marks.

#### Question:

[Marks: 4 + 4 + 2 = 10]

**CLO:** <2> Apply principles and concepts of parallel and distributed computing to solve computational problems;  
**Bloom Taxonomy Level:** <Applying>

- (a) The code given below cannot be parallelized due to multiple dependencies. Draw the dependency graph showing all data-dependences, output-dependences, and anti-dependences.

```
for i = 1 to 50
    A[i] = B[i-1] + C[i]
    B[i] = A[i+2] + C[i]
    s = s + C[i]
```

- (b) Modify the code given in (a) to remove the dependencies (where possible) and draw the updated dependency graph showing all data-dependences, output-dependences, and anti-dependences.
- (c) Can this code now be parallelized? If yes, write the parallel code.