**National University of Computer & Emerging Sciences, Karachi Computer Science Department**

**Summer 2023, Lab Manual – 06**

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| **Course Code: AI-2002** | **Course: Artificial Intelligence Lab** |
| **Instructor(s):** | **Sania Urooj** |

**Lab Tasks**

**Task#1:**

Implement the following tree using minimax algorithm.



**Task#2:**

Solve the below tree by using alpha-beta pruning method.



**Task#3:**

Timetabling is a complex task faced by schools, colleges, and universities to efficiently schedule classes, lectures, exams, and other events while satisfying various constraints and optimizing resource utilization. Constraint Satisfaction Problems (CSPs) provide a natural and effective framework for modeling and solving these timetabling challenges. Let's delve deeper into how CSPs are applied in school and university timetabling:

**Variables:**

* Timeslots: Each timeslot represents a specific time and day when a class or event can take place. For example, Monday 9:00 AM, Tuesday 11:00 AM, etc.
* Classrooms: These are the physical spaces where classes and events are held.
* Teachers: Representing the educators who conduct the classes.
* Subjects/Courses: Representing the different courses or subjects being offered.

**Constraints:**

Various constraints must be satisfied to ensure a valid and feasible timetable:

* Availability Constraints: Teachers should be available during the assigned timeslots, and classrooms should be available when classes need to be scheduled.
* Capacity Constraints: The capacity of the classrooms should be sufficient to accommodate the number of students enrolled in each class.

**Task #4:**

How Adversarial search differ from other searching algorithms?