National University of Computer and Emerging Sciences, Lahore Campus

Course:	Software Software	Course Code:	CS497
Program:	BS (CS)	Semester:	Fall 2023
Duration:	60 Minutes (1 Hour)	Total Marks:	20
Paper Date:	30-Sep-23	Weight	10%
Section:	All	Page(s):	3
Exam:	Sessional I		

Instructions:

Provide answers on the designated place in the question paper **only**. Rough sheets may be used but should **not** be submitted.

Name: _____ Roll Number: _____

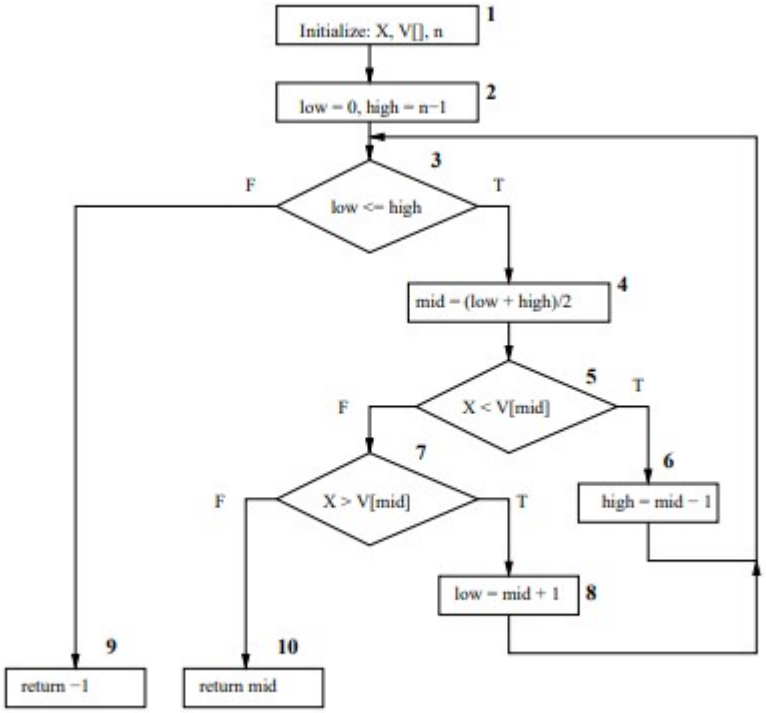
Section _____

Question 1 (Max. Marks=20)

```
int binsearch(int X, int V[], int n){
   int low, high, mid;
   low = 0;
   high = n - 1;
   while (low <= high) {
      mid = (low + high)/2;
      if (X < V[mid])
           high = mid - 1;
      else if (X > V[mid])
           low = mid + 1;
      else
           return mid;
    }
    return -1;
}
```

For the code above (i.e. Binary Search Function), answer the questions written below:

1. Draw Control Flow graph. [4]



2. Determine all paths for 100% Statement Coverage.[5]

- Path 1: 1 – 2 – 3 – 4 – 5 – 7 – 10.
- Path 2: 1 – 2 – 3 – 4 – 5 – 7 – 8 – 3 – 9.
- Path 3: 1 – 2 – 3 – 4 – 5 – 6 – 3 – 9.

3. Generate test data in following format.[3]

Path	Input	Expected output	Actual output
Two paths with -1 output , one path with mid value			

4. List infeasible path(s), if any. [3]

An infeasible path is the node sequence 1 – 2 – 3 – 9. This is because the size of an array cannot be a negative number.

5. If the paths of 100% statement coverage are considered as identified in part (2); what percentage of branch coverage they are giving?[5]

100% branch coverage.