**Question**

A class Admission contains the admission numbers of 100 students. Some of the data members/member functions are given below: [10]  
Class name: Admission  
Data member/instance variable:  
Adno[]: integer array to store admission numbers  
Member functions/methods:  
Admission(): constructor to initialize the array elements  
void fill Array(): to accept the elements of the array in ascending order  
int binSearch(int 1, int u, int v): to search for a particular admission number (v) using binary search and normal technique and returns 1 if found otherwise returns -1  
Specify the class Admission giving details of the constructor, void fill Array() and int binSearch(int, int, int). Define the main() function to create an object and call the functions accordingly to enable the task.

**Algorithm**

1. Start

2. Define a class Admission with one instance variable:

- Adno of type int[] to store admission numbers.

3. Define a constructor for the class Admission:

- Initialize Adno as an array of size 100.

4. Define a method fillArray() to populate the array with admission numbers:

- Create a Scanner object to read input from the user.

- Prompt the user to enter 100 admission numbers in ascending order.

- Use a loop to read 100 integers into the Adno array.

5. Define a method binSearch(int l, int u, int v) to perform binary search on the array:

- While the lower index l is less than or equal to the upper index u:

- Calculate the middle index mid as (l + u) / 2.

- If Adno[mid] equals v, return 1 indicating the element is found.

- If Adno[mid] is less than v, set l to mid + 1 to search the upper half.

- If Adno[mid] is greater than v, set u to mid - 1 to search the lower half.

- If the loop ends without finding the element, return -1 indicating the element is not found.

6. In the main method:

- Create an object of the class Admission.

- Call the fillArray() method on the object to populate the array with admission numbers.

- Create a Scanner object to read input from the user.

- Prompt the user to enter an admission number to search for.

- Read the admission number into an integer variable searchNumber.

- Call the binSearch() method on the object with parameters 0, 99, and searchNumber.

- If the result is 1, print "Admission number found."

- If the result is -1, print "Admission number not found."

- Close the Scanner object.

7. End

**Variable Description**

|  |  |  |
| --- | --- | --- |
| Variable | Data Type | Purpose |
| Adno | int[] | Stores Admission number |
| i | int | Loop variable for fillarray() |
| l | int | Lower bound index for binary search |
| u | int | upper bound index for binary search |
| v | int | Value to be searched in the array |
| mid | int | Temporary variable to store mid-value |
| searchNumber | int | Admission number that user wants to search |
| result | int | Stores the result of binary search by binSearch() |