

Six Steps to use PAAM-based PROSOL Application

A user can pursue the following six steps to solve the given programming question in the application.

Step 1: The problem statement is shown at the top of the application as shown in Figure 1.

The screenshot displays the PAAM application interface. At the top, a navigation bar contains tabs for '1: Algorithm', '2: Basics', '3: Input/Output', '4: Selection', '5: Repetition', '6: Functions', '7: Arrays', 'GAME', and 'DownLoad'. Below this, the title 'Problem Analysis Algorithmic Model (PAAM)' is centered, with a subtitle 'Algorithms and Pseudocode : 5/5'. The main problem statement reads: 'Problem is to design an algorithm for a program that will read 5 numbers. The program then calculates the sum and displays the average of those 5 numbers.' Below the problem statement are three columns: 'INPUT' with five rows for 'Enter Number 1, N1' through 'Enter Number 5, N5'; 'PROCESS' with input fields for 'N1' through 'N5', and 'Sum' and 'Average'; and 'OUTPUT' with an 'Average' field. A 'PSEUDO-CODE' section contains a list of steps: 'Start', 'increment Count by 1, Enter S (Exam Score), Sum=Sum + S', 'While (Count <=5) then', 'End While', 'Set Average, Count to zero', 'Write Average=Sum/Count', and 'Stop'. An 'Answer:' section contains a text box with 'Given Problem Statement' highlighted in orange. Navigation buttons for 'Previous Question', 'Check Solution', and arrow keys are also visible.

Figure 1: Problem Statement in the PAAM model

Step 2: The next section deals with the problem statement requirements as shown in Figure 2. A user should fill in the input parameters based on the given problem statement. The application shows the process and output based on the given input parameters by clicking the right arrow buttons to the user for the given problem statement.

1: Algorithm 2: Basics 3: Input/Output 4: Selection 5: Repetition 6: Functions 7: Arrays GAME DownLoad

Problem Analysis Algorithmic Model (PAAM)

Algorithms and Pseudocode: 5/5

Problem is to design an algorithm for a program that will read 5 numbers. The program then calculates the sum and displays the average of those 5 numbers.

INPUT	PROCESS	OUTPUT																				
Enter Number 1, N1: 5 Enter Number 2, N2: 7 Enter Number 3, N3: 12 Enter Number 4, N4: 15 Enter Number 5, N5: 21	<table border="1"> <tr> <td>N1</td><td>N2</td><td>N3</td><td>N4</td><td>N5</td></tr> <tr> <td>5</td><td>7</td><td>12</td><td>15</td><td>21</td></tr> <tr> <td>Sum</td><td colspan="4">80</td></tr> <tr> <td>Average</td><td colspan="4">12</td></tr> </table>	N1	N2	N3	N4	N5	5	7	12	15	21	Sum	80				Average	12				Average: 12
N1	N2	N3	N4	N5																		
5	7	12	15	21																		
Sum	80																					
Average	12																					

PSEUDO-CODE

Given Steps:

```

Start
increment Count by 1, Enter S (Exam Score), Sum=Sum + S
While (Count <=5) then
End While
Set Average, Count to zero
Write Average=Sum/Count
Stop
  
```

Answer:

Problem Statement Analysis (Input → Process → Output)

(Instruction: Select any line/step from the first List Box and move it to the second List Box and make all its lines into correct steps of sequential order, using the Arrow Keys.)

Previous Question Check Solution

Figure 2: Problem Statement Analysis in the PAAM model

Step 3: The next section deals with the problem-solving strategy as shown in Figure 3. The randomized pseudo-code steps of the given problem statement are shown in the “Given Steps” list box. The user moves all the steps from the “Given Steps” list box to the “Answer” list box one by one by selecting the step and clicking the right or left arrow buttons.

1: Algorithm 2: Basics 3: Input/Output 4: Selection 5: Repetition 6: Functions 7: Arrays GAME DownLoad

Problem Analysis Algorithmic Model (PAAM)

Algorithms and Pseudocode: 5/5

Problem is to design an algorithm for a program that will read 5 numbers. The program then calculates the sum and displays the average of those 5 numbers.

INPUT	PROCESS	OUTPUT																				
Enter Number 1, N1: 5 Enter Number 2, N2: 7 Enter Number 3, N3: 12 Enter Number 4, N4: 15 Enter Number 5, N5: 21	<table border="1"> <tr> <td>N1</td><td>N2</td><td>N3</td><td>N4</td><td>N5</td></tr> <tr> <td>5</td><td>7</td><td>12</td><td>15</td><td>21</td></tr> <tr> <td>Sum</td><td colspan="4">80</td></tr> <tr> <td>Average</td><td colspan="4">12</td></tr> </table>	N1	N2	N3	N4	N5	5	7	12	15	21	Sum	80				Average	12				Average: 12
N1	N2	N3	N4	N5																		
5	7	12	15	21																		
Sum	80																					
Average	12																					

PSEUDO-CODE

Given Steps:

```

Stop
Set Average, Count to zero
  
```

Answer:

```

Start
While (Count <=5) then
increment Count by 1, Enter S (Exam Score), Sum=Sum + S
End While
Write Average=Sum/Count
  
```

Problem Solving Strategy (Given Steps → Answer List box)

(Instruction: Select any line/step from the first List Box and move it to the second List Box and make all its lines into correct steps of sequential order, using the Arrow Keys.)

Previous Question Check Solution

Check Solution Button

Figure 3: Problem Solving Strategy in the PAAM model

Step 4: The user solution can be checked only by clicking the “Check Solution” button when he moves all the steps from the “Given Steps” list box to the “Answer” list box, as shown in Figure 3.

Step 5: The correct solution is provided in the “Correct Steps” list box. Errors in the user solution are shown in red color in the “Answer” list box, as shown in Figure 4.

The screenshot displays the PAAM interface with the following components:

- Menu Bar:** 1: Algorithm, 2: Basics, 3: Input/Output, 4: Selection, 5: Repetition, 6: Functions, 7: Arrays, GAME, Download
- Problem Statement:** "Problem is to design an algorithm for a program that will read 5 numbers. The program then calculates the sum and displays the average of these 5 numbers." (Algorithms and Pseudocode : 5/5)
- INPUT:**

Enter Number 1, N1	5
Enter Number 2, N2	7
Enter Number 3, N3	12
Enter Number 4, N4	15
Enter Number 5, N5	21
- PROCESS:**

N1	N2	N3	N4	N5
5	7	12	15	21
Sum	60			
Average	12			
- OUTPUT:** Average 12
- PSEUDO-CODE:**
 - Given Steps:**
 - Next or Previous Question
 - Answer:**

```
Start
Set Average, Count to zero
increment Count by 1, Enter S (Exam Score), Sum=Sum
While (Count <=5) then
Write Average=Sum/Count
End While
Stop
```
 - Check Solution:**
 - Wrong Answer Errors : 4
 - Correct Steps:
 - User Solution (in Answer box):**

```
Start
Set Average, Count to zero
While (Count <=5) then
increment Count by 1, Enter S (Exam Score), Sum=Sum + S
End While
Write Average=Sum/Count
Stop
```

Annotations in the image include:

- An arrow pointing from the "Next or Previous Question" button to the menu bar.
- An arrow pointing from the "Error checking process in the user solution" box to the "Check Solution" button.
- An arrow pointing from the "Error checking process in the user solution" box to the "Wrong Answer" text.
- An arrow pointing from the "Error checking process in the user solution" box to the "Correct Steps" text.

Figure 4: Error checking in the user solution

Step 6: A user can move to the next and previous question by clicking the relevant button. The other way to switch to another question or topic is to select it from the menu bar, as shown in Figure 4.