Iļja Junkins (ij23031)

| Test Case No. | Description | Input Values | Expected Output |
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| 1 | Test with three lengths forming a valid triangle | n = 3 a[0] = 3 a[1] = 4 a[2] = 5 | Triangle: 3, 4, 5 Area: 6 |
| 2 | Test with lengths that do not form a triangle | n = 3 a[0] = 1 a[1] = 2 a[2] = 3 | Error: No valid triangles can be formed with the given lengths. |
| 3 | Test with negative length input | n = 3 a[0] = -1 a[1] = 4 a[2] = 5 | Prompt for re-entry of a[0] until a positive number is entered |
| 4 | Test with zero as the number of elements | n = 0 | Program exited successfully. |
| 5 | Test with invalid number of elements (less than 3) | n = 2 | Invalid input. Please enter a positive integer greater than 2. |
| 6 | Test with non-integer input for the number of elements | n = 'a' | Invalid input. Please enter a positive integer. |
| 7 | Test with multiple valid triangles | n = 4 a[0] = 3 a[1] = 4 a[2] = 5 a[3] = 6 | Displays all possible triangles and their area in the console. For example,  Triangle: 3, 4, 5 Area: 6;  Triangle: 3, 4, 6 Area: 5.33268 … |
| 8 | Test with large input numbers | n = 3 a[0] = 300 a[1] = 400 a[2] = 500 | Triangle: 300, 400, 500 Area: 60000 |
| 9 | Test with all zero lengths | n = 3a[0] = 0 a[1] = 0 a[2] = 0 | Invalid length. Please enter a positive number greater than 0. |
| 10 | Test with floating-point length inputs | n = 3a[0] = 3.5 a[1] = 4.5 a[2] = 5.5 | Triangle: 3.5, 4.5, 5.5 Area: 7.85489 |