Trace Tables Test

1. Complete the truth table for algorithm below.

A = 3;

B = 7;

C = -1;

loop while A > 0  
 if(B \* C > A)

B = B - C

else

A = A - 1

end if

C = C + A

end loop  
  
 output A," ",B," ",C

|  |  |  |
| --- | --- | --- |
| **A** | **B** | **C** |
| 3 | 7 | -1 |
| 2 | 7 | 1 |
| 2 | 6 | 3 |
| 2 | 3 | 5 |
| 2 | -2 | 7 |
| 1 | -2 | 8 |
| 0 | -2 | 8 |

What is output by the last line of the algorithm?

0 -2 8

1. Given the following array: LIST

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| [0] | [1] | [2] | [3] | [4] | [5] | [6] |
| 10 | 13 | 22 | 38 | 41 | 59 | 67 |

and the method CRAZY.

method CRAZY(X)

A = 0;

B = 6;

loop while A <= B

M = (A + B) / 2;   
 if LIST[M] = X)   
 return M;

else if(LIST[M] < X)

A = M + 1;

else

B = M - 1;

end if

end loop

return -1;

Use the trace table below to Use the trace table below to  
 determine what is returned determine what is returned

by a call to method CRAZY(41). by a call to method CRAZY(13).

\***Note**: You may not need all of the rows provided in the trace tables.

|  |  |  |
| --- | --- | --- |
| A | B | M |
| 0 | 6 | 3 |
| 4 | 6 | 3 |
| 4 | 4 | 5 |
|  |  | 4 |
|  |  |  |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| A | B | M |
| 0 | 7 | 3 |
| 0 | 2 | 3 |
|  |  | 1 |
|  |  |  |
|  |  |  |
|  |  |  |

Return value = \_\_\_\_\_4\_\_\_\_\_\_\_\_ Return value = \_\_\_\_\_1\_\_\_\_\_\_\_

Explain what this algorithm does? Binary Search – return index of parameter X