# Complete the trace tables for the following codes

In all exercises below index position 1 is the first index position eg in list a=[3,4,5,6], the value 3 is in position 1.

a ← 2

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| a | b | c | d | e | Output |
| 2 | 3 | 5 |  |  |  |
| 5 |  |  |  |  |  |
| 10 |  |  |  |  |  |
| 23 |  |  | 56 | 2 | 2 |

b ← 3

c ← a + b

a ← c

a ← a \* 2

a ← a + 13

d ← a << 1

e ← d MOD 3

OUTPUT e

a ← 12

|  |  |  |
| --- | --- | --- |
| a | b | Output |
| 12 |  |  |
|  | 24 |  |
|  | 10 |  |
|  |  | 10 |

IF a < 10 THEN

b ← 10 \* a

ELSE

b ← 2 \* a

ENDIF

IF b > 30 THEN

b ← 30

ELSE

b ← 10

ENDIF

OUTPUT b

|  |  |  |  |
| --- | --- | --- | --- |
| num1 | num2 | i | Output |
| 3 | 4 | 1 |  |
| 7 | 3 | 2 |  |
| 10 | 5 | 3 |  |
| 15 | 7 | 4 |  |
| 22 | 11 |  | 22 |

num1 ← 3

num2 ← 4

FOR i ← 1 TO 4

num1 ← num1 + num2

num2 ← num1 // 2

ENDFOR

OUTPUT num1

|  |  |
| --- | --- |
| x | y |
| 10 | 2 |
| 8 | 3 |
| 5 | 4 |

x ← 10

y ← 2

WHILE x>=2

x ← x - y

y ← y + 1

ENDWHILE

|  |  |  |
| --- | --- | --- |
| x | y | OUTPUT |
| 6 | 6 |  |
|  | 5 |  |
|  | 4 |  |
|  | 3 | 3 |
|  | 2 | 2 |

x ← 12

y ← x

WHILE y > 1

y ← y - 1

if x MOD y ==0

OUTPUT y

ENDWHILE

|  |  |  |
| --- | --- | --- |
| i | j | a |
| 1 | 2 | 4 |
| 2 | 2 | 6 |
| 3 | 2 | 8 |
| 1 | 3 | 5 |
| 2 | 3 | 8 |
| 3 | 3 | 11 |

FOR i ← 1 TO 3

FOR j ← 2 TO 3

a ← i \* j + 2

ENDFOR

ENDFOR

x ← 0

y ← 0

z ← 0

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| w | x | y | z | Output |
| 3 | 0 | 0 | 0 |  |
|  | 3 | 1 |  |  |
| 4 | 7 | 2 |  |  |
| -1 |  |  |  | 3 |

w ← USERINPUT

WHILE w >= 0

x ← x + w

y ← y + 1

w ← USERINPUT

ENDWHILE

z ← x // y

OUTPUT z

Use input for w: 3, 4, -1

What happens if you enter the sequence -1, 2, 3,6,7?

z = 0 // 0 which would result in zero division error

What happens if you enter the sequence 0, -1?

z = 0 / 1 which would be 0

|  |  |  |  |
| --- | --- | --- | --- |
| i | C[i] | a[1][i] | A[2][i] |
| 1 | 3 | 0 | 3 |
| 2 | 5 | 1 | 4 |
| 3 | 5 | 2 | 3 |

a=[[0,1,2][3,4,3]]

c=[0,0,0]

FOR i ← 1 TO 3

c[i] ← a[1][i]+ a[2][i]

ENDFOR