**Python-Task-1**

Question: - Write a flow of memory allocation in RAM for following Python code

1. X = 1000
2. Y = [1000, 2000, 3000]
3. Z = “HYD”
4. A = [X, Y, 1000, 2000, 3000, Z]
5. K = A
6. L = [1000, 2000, 3000]
7. M = A [:]
8. N = deepcopy(A)
9. O = copy(A)
10. A.append(4000)
11. print(K)
12. print(L)
13. print(M)
14. print(N)
15. print(O)

Soultion: -

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **stack** | **heap** | | | | | **last\_id** |
| ref\_obj | objs\_indexs\_allcoation | id | value | type | rc |  |
| X |  | 1001 | 1000 | int | 5 |  |
| Y | 0 1 2 | 1002 | <> | list | 5 |  |
|  | 0 | 1003 | 1000 | int | 1 |  |
|  | 1 | 1004 | 2000 | int | 1 |  |
|  | 2 | 1005 | 3000 | int | 1 |  |
| Z | 0 1 2 | 1006 | <> | str | 5 |  |
|  | 0 | 1007 | H | str | 1 |  |
|  | 1 | 1008 | Y | str | 1 |  |
|  |  | 1009 | D | str | 1 |  |
| A | 0 1 2 3 4 5 6(4000) | 1010 | <> | list | 2 |  |
|  | 0 | 1001 | id referring | | |  |
|  | 1 | 1002 | id referring | | |  |
|  | 2 | 1011 | 1000 | int | 4 |  |
|  | 3 | 1012 | 2000 | int | 4 |  |
|  | 4 | 1013 | 3000 | int | 5 |  |
|  | 5 | 1006 | id referring | | |  |
|  | 6 | 1021 | 4000 | int | 1 | Stopped Here |
| K | 0 1 2 3 4 5 | 1010 | id referring | | |  |
| L | 0 1 2 | 1014 | <> | list | 1 |  |
|  | 0 | 1015 | 1000 | int | 1 |  |
|  | 1 | 1016 | 2000 | int | 1 |  |
|  | 2 | 1017 | 3000 | int | 1 |  |
| M | 0 1 2 3 4 5 | 1018 | <> | list | 1 |  |
|  | 0 | 1001 | id referring | | |  |
|  | 1 | 1002 | id referring | | |  |
|  | 2 | 1011 | id referring | | |  |
|  | 3 | 1012 | id referring | | |  |
|  | 4 | 1013 | id referring | | |  |
|  | 5 | 1006 | id referring | | |  |
| N | 0 1 2 3 4 5 | 1019 | <> | list | 1 |  |
|  | 0 | 1001 | id referring | | |  |
|  | 1 | 1002 | id referring | | |  |
|  | 2 | 1011 | id referring | | |  |
|  | 3 | 1012 | id referring | | |  |
|  | 4 | 1013 | id referring | | |  |
|  | 5 | 1006 | id referring | | |  |
| O | 0 1 2 3 4 5 | 1020 | <> | list | 1 |  |
|  | 0 | 1001 | id referring | | |  |
|  | 1 | 1002 | id referring | | |  |
|  | 2 | 1011 | id referring | | |  |
|  | 3 | 1012 | id referring | | |  |
|  | 4 | 1013 | id referring | | |  |
|  | 5 | 1006 | id referring | | |  |

Output: -

[1000, [1000, 2000, 3000], 1000, 2000, 3000, 'HYD', 4000]

[1000, 2000, 3000]

[1000, [1000, 2000, 3000], 1000, 2000, 3000, 'HYD']

[1000, [1000, 2000, 3000], 1000, 2000, 3000, 'HYD']

[1000, [1000, 2000, 3000], 1000, 2000, 3000, 'HYD']