1. 4 3 2 1 0 9 8 7 6 5

Push 0

Push 1

Push 2

Push 3

Push 4

Then pop 4

Pop 3

Pop 2

Pop 1

Pop 0

Push 5

Push 6

Push 7

Push 8

Push 9

Then pop 9

Pop 8

Pop 7

Pop 6

Pop 5

2) 4 6 8 7 5 3 2 9 0 1

|  |  |  |
| --- | --- | --- |
| **PUSH** | **POP** | **OUTPUT** |
| 0 |  |  |
| 1 |  |  |
| 2 |  |  |
| 3 |  |  |
| 4 | 4 | 4 |
| 5 |  |  |
| 6 | 6 | 4,6 |
| 7 |  |  |
| 8 | 8 | 4,6,8 |
|  | 7 | 4,6,7,8 |
|  | 5 | 4,5,6,7,8 |
|  | 3 | 3,4,5,6,7,8 |
|  | 2 | 2,3,4,5,6,7,8 |
| 9 |  |  |
|  | 9 | 2,3,4,5,6,7,8,9 |

Now the stack contains 0,1 . 1 at the top and we cannot pop 0.

3) 2 5 6 7 4 8 9 3 1 0

|  |  |  |
| --- | --- | --- |
| **push** | **pop** | **output** |
| 0 |  |  |
| 1 |  |  |
| 2 |  |  |
|  | 2 | 2 |
| 3 |  |  |
| 4 |  |  |
| 5 |  |  |
|  | 5 | 2,5 |
| 6 |  |  |
|  | 6 | 2,5,6 |
| 7 |  |  |
|  | 7 | 2,5,6,7 |
|  | 4 | 2,4,5,6,7 |
| 8 |  |  |
|  | 8 | 2,4,5,6,7,8 |
| 9 |  |  |
|  | 9 | 2,4,5,6,7,8,9 |
|  | 3 | 2,3,4,5,6,7,8,9 |
|  | 1 | 1,2,3,4,5,6,7,8,9 |
|  | 0 | 0,1,2,3,4,5,6,7,8,9 |

4) 4 3 2 1 0 5 6 7 8 9

|  |  |  |
| --- | --- | --- |
| **PUSH** | **POP** | **RESULT** |
| 0 |  |  |
| 1 |  |  |
| 2 |  |  |
| 3 |  |  |
| 4 | 4 | 4 |
|  | 3 | 3,4 |
|  | 2 | 2,3,4 |
|  | 1 | 1,2,3,4 |
|  | 0 | 0,1,2,3,4 |
| 9 |  |  |
| 8 |  |  |
| 7 |  |  |
| 6 |  |  |
| 5 |  |  |
|  | 5 | 0,1,2,3,4,5 |
|  | 6 | 0,1,2,3,4,5,6 |
|  | 7 | 0,1,2,3,4,5,6,7 |
|  | 8 | 0,1,2,3,4,5,6,7,8 |
|  | 9 | 0,1,2,3,4,5,6,7,8,9 |

5) 1 2 3 4 5 6 9 8 7 0

|  |  |  |
| --- | --- | --- |
| **PUSH** | **POP** | **OUTPUT** |
| 0 |  |  |
| 1 |  |  |
|  | 1 | 1 |
| 2 |  |  |
|  | 2 | 1,2 |
| 3 |  |  |
|  | 3 | 1,2,3 |
| 4 |  |  |
|  | 4 | 1,2,3,4 |
| 5 |  |  |
|  | 5 | 1,2,3,4,5 |
| 6 |  |  |
|  | 6 | 1,2,3,4,5,6 |
| 7 |  |  |
| 8 |  |  |
| 9 |  |  |
|  | 9 | 1,2,3,4,5,6,9 |
|  | 8 | 1,2,3,4,5,6,8,9 |
|  | 7 | 1,2,3,4,5,6,7,8,9 |
|  | 0 | 0,1,2,3,4,5,6,7,8,9 |

6) 0 4 6 5 3 8 1 7 2 9

|  |  |  |
| --- | --- | --- |
| **PUSH** | **POP** | **OUTPUT** |
| 0 |  |  |
|  | 0 | 0 |
| 1,2,3,4 |  |  |
|  | 4 | 0,4 |
| 5,6 | 6 | 0,4,6 |
|  | 5 | 0,4,5,6 |
|  | 3 | 0,3,4,5,6 |
| 7,8 | 8 | 0.3.4.5.6.8 |
|  | 1 | **Not possible** |

Because the stack contains 7 on the top.

7) 1 4 7 9 8 6 5 3 0 2

|  |  |  |
| --- | --- | --- |
| PUSH | POP | OUTPUT |
| 0 |  |  |
| 1 | 1 | 1 |
| 2 |  |  |
| 3 | 4 | 1,4 |
| 5 |  |  |
| 6 |  |  |
| 7 | 7 | 1,4,7 |
| 8 |  |  |
| 9 | 9 | 1,4,7,9 |
|  | 8 | 1,4,7,8,9 |
|  | 6 | 1,4,6,7,8,9 |
|  | 5 | 1,4,5,6,7,8,9 |
|  | 0 | Not possible |

It is not possible because 2 is in the top.

8) 2 1 4 3 6 5 8 7 9 0

|  |  |  |
| --- | --- | --- |
| **PUSH** | **POP** | **OUTPUT** |
| 0,1,2 |  |  |
|  | 2 | 2 |
|  | 1 | 1,2 |
| 3,4 |  |  |
|  | 4 | 1,2,4 |
|  | 3 | 1,2,3,4 |
| 5,6 |  |  |
|  | 6 | 1,2,3,4,6 |
|  | 5 | 1,2,3,4,5,6 |
| 7,8, | 8 | 1,2,3,4,5,6,8 |
|  | 7 | 1,2,3,4,5,6,7,8 |
| 9 |  |  |
|  | 9 | 1,2,3,4,5,6,8,8 |
|  | 0 | 0,1,2,3,4,5,6,8,9 |

Only b,f,g are possible