

%attach /home/sebastien/Nutstore Files/SAGE/SimpleIntegralFusionRings.sage

*# Classification of all the non-pointed simple integral 1-Frobenius fusion rings, under the following bounds:
Rank<=r and FPDim<=d with (r,d) = (4, 10^10), (5, 10^7), (6, 10^6), (7, 10^5), (8, 20000), (9, 10000), (10, 5000), (11, 3000), (12,1000).*

*#r5d60t[[1, 1], [3, 2], [4, 1], [5, 1]]
#Finite simple group A5*

S60=[[
[1,0,0,0,0],[0,1,0,0,0],[0,0,1,0,0],[0,0,0,1,0],[0,0,0,0,1]],
[0,1,0,0,0],[1,1,0,0,1],[0,0,0,1,1],[0,0,1,1,1],[0,1,1,1,1]],
[0,0,1,0,0],[0,0,0,1,1],[1,0,1,0,1],[0,1,0,1,1],[0,1,1,1,1]],
[0,0,0,1,0],[0,0,1,1,1],[0,1,0,1,1],[1,1,1,1,1],[0,1,1,1,2]],
[0,0,0,0,1],[0,1,1,1,1],[0,1,1,1,1],[0,1,1,1,2],[1,1,1,2,2]]
]]

*#r6d168t[[1, 1], [3, 2], [6, 1], [7, 1], [8, 1]]
#Finite simple group PSL(2,7)*

S168=[[
[1,0,0,0,0,0],[0,1,0,0,0,0],[0,0,1,0,0,0],[0,0,0,1,0,0],[0,0,0,0,1,0],[0,0,0,0,0,1]],
[0,1,0,0,0,0],[0,0,1,1,0,0],[1,0,0,0,0,1],[0,0,1,0,1,1],[0,0,0,1,1,1],[0,1,0,1,1,1]],
[0,0,1,0,0,0],[1,1,0,0,0,1],[0,1,0,1,0,0],[0,1,0,0,1,1],[0,0,0,1,1,1],[0,0,1,1,1,1]],
[0,0,0,1,0,0],[0,0,1,0,1,1],[0,1,0,0,1,1],[1,0,0,2,1,2],[0,1,1,1,2,2],[0,1,1,2,2,2]],
[0,0,0,0,1,0],[0,0,0,1,1,1],[0,0,0,1,1,1],[0,1,1,1,2,2],[1,1,1,2,2,2],[0,1,1,2,2,3]],
[0,0,0,0,0,1],[0,1,0,1,1,1],[0,0,1,1,1,1],[0,1,1,2,2,2],[0,1,1,2,2,3],[1,1,1,2,3,3]]
]]

#r7d210t[[1, 1], [5, 3], [6, 1], [7, 2]]

S210=[[
[1,0,0,0,0,0,0],[0,1,0,0,0,0,0],[0,0,1,0,0,0,0],[0,0,0,1,0,0,0],[0,0,0,0,1,0,0],[0,0,0,0,0,1,0],[0,0,0,0,0,0,1]],
[0,1,0,0,0,0,0],[1,1,0,1,0,1,1],[0,0,1,0,1,1,1],[0,1,0,0,1,1,1],[0,0,1,1,1,1,1],[0,1,1,1,1,1,1],[0,1,1,1,1,1,1]],
[0,0,1,0,0,0,0],[0,0,1,0,1,1,1],[1,1,1,0,0,1,1],[0,0,0,1,1,1,1],[0,1,0,1,1,1,1],[0,1,1,1,1,1,1],[0,1,1,1,1,1,1]],
[0,0,0,1,0,0,0],[0,1,0,0,1,1,1],[0,0,0,1,1,1,1],[1,0,1,1,0,1,1],[0,1,1,0,1,1,1],[0,1,1,1,1,1,1],[0,1,1,1,1,1,1]],
[0,0,0,0,1,0,0],[0,0,1,1,1,1,1],[0,1,0,1,1,1,1],[0,1,1,0,1,1,1],[1,1,1,1,1,1,1],[0,1,1,1,2,1],[0,1,1,1,1,1,2]],
[0,0,0,0,0,1,0],[0,1,1,1,1,1,1],[0,1,1,1,1,1,1],[0,1,1,1,1,1,1],[0,1,1,1,1,2,1],[1,1,1,1,2,0,3],[0,1,1,1,1,3,1]],
[0,0,0,0,0,0,1],[0,1,1,1,1,1,1],[0,1,1,1,1,1,1],[0,1,1,1,1,1,1],[0,1,1,1,1,1,2],[0,1,1,1,1,3,1],[1,1,1,1,2,1,2]]
],[
[1,0,0,0,0,0,0],[0,1,0,0,0,0,0],[0,0,1,0,0,0,0],[0,0,0,1,0,0,0],[0,0,0,0,1,0,0],[0,0,0,0,0,1,0],[0,0,0,0,0,0,1]],
[0,1,0,0,0,0,0],[1,1,0,1,0,1,1],[0,0,1,0,1,1,1],[0,1,0,0,1,1,1],[0,0,1,1,1,1,1],[0,1,1,1,1,1,1],[0,1,1,1,1,1,1]],
[0,0,1,0,0,0,0],[0,0,1,0,0,1,1],[1,1,1,0,0,1,1],[0,0,0,1,1,1,1],[0,1,0,1,1,1,1],[0,1,1,1,1,1,1],[0,1,1,1,1,1,1]],
[0,0,0,1,0,0,0],[0,1,0,0,1,1,1],[0,0,0,1,1,1,1],[1,0,1,1,0,1,1],[0,1,1,0,1,1,1],[0,1,1,1,1,1,1],[0,1,1,1,1,1,1]],
[0,0,0,0,1,0,0],[0,0,1,1,1,1,1],[0,1,0,1,1,1,1],[0,1,1,0,1,1,1],[1,1,1,1,1,1,1],[0,1,1,1,2,1],[0,1,1,1,1,1,2]],
[0,0,0,0,1,0,0],[0,0,1,1,1,1,1],[0,1,0,1,1,1,1],[0,1,1,0,1,1,1],[1,1,1,1,1,1,1],[0,1,1,1,2,1],[0,1,1,1,1,1,2]],
[0,0,0,0,0,1,0],[0,1,1,1,1,1,1],[0,1,1,1,1,1,1],[0,1,1,1,1,1,1],[0,1,1,1,1,2,1],[1,1,1,1,2,1,2],[0,1,1,1,1,2,2]],
[0,0,0,0,0,0,1],[0,1,1,1,1,1,1],[0,1,1,1,1,1,1],[0,1,1,1,1,1,1],[0,1,1,1,1,1,2],[0,1,1,1,1,2,2],[1,1,1,1,2,2,1]]
]]

#r7d360t[[1,1],[5,2],[8,2],[9,1],[10,1]]

S360=[[
[1,0,0,0,0,0,0],[0,1,0,0,0,0,0],[0,0,1,0,0,0,0],[0,0,0,1,0,0,0],[0,0,0,0,1,0,0],[0,0,0,0,0,1,0],[0,0,0,0,0,0,1]],
[0,1,0,0,0,0,0],[1,1,0,0,0,1,1],[0,0,0,1,1,1,0],[0,0,1,1,1,1,1],[0,0,1,1,1,1,1],[0,1,1,1,1,1,1],[0,1,0,1,1,1,2]],
[0,0,1,0,0,0,0],[0,0,0,1,1,1,0],[1,0,1,0,0,1,1],[0,1,0,1,1,1,1],[0,1,0,1,1,1,1],[0,1,1,1,1,1,1],[0,0,1,1,1,1,2]],
[0,0,0,1,0,0,0],[0,0,1,1,1,1,1],[0,1,0,1,1,1,1],[1,1,1,1,2,1,2],[0,1,1,2,0,2,2],[0,1,1,2,2,2],[0,1,1,2,2,2,2]],
[0,0,0,0,1,0,0],[0,0,1,1,1,1,1],[0,1,0,1,1,1,1],[0,1,1,2,0,2,2],[1,1,1,0,3,1,2],[0,1,1,2,1,2,2],[0,1,1,2,2,2,2]],
[0,0,0,0,0,1,0],[0,1,1,1,1,1,1],[0,1,1,1,1,1,1],[0,1,1,1,2,2,2],[0,1,1,2,1,2,2],[1,1,1,2,2,2,2],[0,1,1,2,2,2,3]],
[0,0,0,0,0,0,1],[0,1,0,1,1,1,2],[0,0,1,1,1,1,2],[0,1,1,2,2,2,2],[0,1,1,2,2,2,2],[0,1,1,2,2,2,3],[1,2,2,2,2,3,2]]
],[

#Finite simple group A6

[1,0,0,0,0,0,0],[0,1,0,0,0,0,0],[0,0,1,0,0,0,0],[0,0,0,1,0,0,0],[0,0,0,0,1,0,0],[0,0,0,0,0,1,0],[0,0,0,0,0,0,1]],
[0,1,0,0,0,0,0],[1,1,0,0,0,1,1],[0,0,0,1,1,1,0],[0,0,1,1,1,1,1],[0,0,1,1,1,1,1],[0,1,1,1,1,1,1],[0,1,0,1,1,1,2]],
[0,0,1,0,0,0,0],[0,0,0,1,1,1,0],[1,0,1,0,0,1,1],[0,1,0,1,1,1,1],[0,1,0,1,1,1,1],[0,1,1,1,1,1,1],[0,0,1,1,1,1,2]],
[0,0,0,1,0,0,0],[0,0,1,1,1,1,1],[0,1,0,1,1,1,1],[1,1,1,1,1,1,2],[0,1,1,1,2,1,2],[0,1,1,1,2,2,2],[0,1,1,2,2,2,2]],
[0,0,0,0,1,0,0],[0,0,1,1,1,1,1],[0,1,0,1,1,1,1],[0,1,1,1,1,2,2],[1,1,1,1,2,1,2],[0,1,1,2,1,2,2],[0,1,1,2,2,2,2]],
[0,0,0,0,0,1,0],[0,0,1,1,1,1,1],[0,1,0,1,1,1,1],[0,1,1,1,1,2,2],[1,1,1,1,2,1,2],[0,1,1,2,1,2,2],[0,1,1,2,2,2,2]],
[0,0,0,0,0,0,1],[0,1,1,1,1,1,1],[0,1,1,1,1,1,1],[0,1,1,1,1,1,1],[0,1,1,1,1,1,2],[0,1,1,1,1,2,2],[1,1,1,1,2,2,2],[0,1,1,2,2,2,3]],
[0,0,0,0,0,0,1],[0,1,0,1,1,1,2],[0,0,1,1,1,1,2],[0,1,1,2,2,2,2],[0,1,1,2,2,2,2],[0,1,1,2,2,2,3],[1,2,2,2,2,3,2]]
]]

#r7d7980t[[1, 1], [19, 1], [20, 1], [21, 1], [42, 2], [57, 1]]

S7980=[[
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[0,1,0,0,0,0,0],[1,0,0,1,2,2,3],[0,0,1,1,2,2,3],[0,1,1,1,2,2,3],[0,2,2,2,4,4,6],[0,2,2,2,4,4,6],[0,3,3,3,6,6,7]],
[0,0,1,0,0,0,0],[0,0,1,1,2,2,3],[1,1,1,1,2,2,3],[0,1,1,2,2,3],[0,2,2,2,5,4,6],[0,2,2,2,4,5,6],[0,3,3,3,6,6,8]],
[0,0,0,1,0,0,0],[0,1,1,1,2,2,3],[0,1,1,2,2,3],[1,1,2,2,0,4,3],[0,2,2,0,9,2,6],[0,2,2,4,2,7,6],[0,3,3,3,6,6,9]],
[0,0,0,0,1,0,0],[0,2,2,2,4,4,6],[0,2,2,2,5,4,6],[0,2,2,0,9,2,6],[1,4,5,9,2,15,12],[0,4,4,2,15,6,12],[0,6,6,6,12,12,18]],
[0,0,0,0,0,1,0],[0,2,2,2,4,4,6],[0,2,2,2,4,5,6],[0,2,2,4,2,7,6],[0,4,4,2,15,6,12],[1,4,5,7,6,12,12],[0,6,6,6,12,12,18]],
[0,0,0,0,0,0,1],[0,3,3,3,6,6,7],[0,3,3,3,6,6,8],[0,3,3,3,6,6,9],[0,6,6,6,12,12,18],[0,6,6,6,12,12,18],[1,7,8,9,18,18,22]]
],[
[1,0,0,0,0,0,0],[0,1,0,0,0,0,0],[0,0,1,0,0,0,0],[0,0,0,1,0,0,0],[0,0,0,0,1,0,0],[0,0,0,0,0,1,0],[0,0,0,0,0,0,1]],
[0,1,0,0,0,0,0],[1,0,0,1,2,2,3],[0,0,1,1,2,2,3],[0,1,1,1,2,2,3],[0,2,2,2,4,4,6],[0,2,2,2,4,4,6],[0,3,3,3,6,6,7]],
[0,0,1,0,0,0,0],[0,0,1,1,2,2,3],[1,1,1,1,2,2,3],[0,1,1,2,2,3],[0,2,2,2,5,4,6],[0,2,2,2,4,5,6],[0,3,3,3,6,6,8]],
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[0,0,0,0,0,1,0],[0,2,2,2,4,4,6],[0,2,2,2,4,5,6],[0,2,2,4,4,5,6],[0,4,4,4,11,9,12],[1,4,5,5,9,10,12],[0,6,6,6,12,12,18]],
[0,0,0,0,0,0,1],[0,3,3,3,6,6,7],[0,3,3,3,6,6,8],[0,3,3,3,6,6,9],[0,6,6,6,12,12,18],[0,6,6,6,12,12,18],[1,7,8,9,18,18,22]]
],[
[1,0,0,0,0,0,0],[0,1,0,0,0,0,0],[0,0,1,0,0,0,0],[0,0,0,1,0,0,0],[0,0,0,0,1,0,0],[0,0,0,0,0,1,0],[0,0,0,0,0,0,1]],
[0,1,0,0,0,0,0],[1,0,0,1,2,2,3],[0,0,1,1,2,2,3],[0,1,1,1,2,2,3],[0,2,2,2,4,4,6],[0,2,2,2,4,4,6],[0,3,3,3,6,6,7]],
[0,0,1,0,0,0,0],[0,0,1,1,2,2,3],[1,1,1,1,2,2,3],[0,1,1,2,2,3],[0,2,2,2,5,4,6],[0,2,2,2,4,5,6],[0,3,3,3,6,6,8]],
[0,0,0,1,0,0,0],[0,1,1,1,2,2,3],[0,1,1,2,2,3],[1,1,2,2,0,4,3],[0,2,2,0,5,6,6],[0,2,2,4,6,3,6],[0,3,3,3,6,6,9]],
[0,0,0,0,1,0,0],[0,2,2,2,4,4,6],[0,2,2,2,5,4,6],[0,2,2,0,5,6,6],[1,4,5,5,8,11,12],[0,4,4,4,6,11,8,12],[0,6,6,6,12,12,18]],
[0,0,0,0,0,1,0],[0,2,2,2,4,4,6],[0,2,2,2,4,5,6],[0,2,2,4,6,3,6],[0,4,4,6,11,8,12],[1,4,5,3,8,12,12],[0,6,6,6,12,12,18]],
[0,0,0,0,0,0,1],[0,3,3,3,6,6,7],[0,3,3,3,6,6,8],[0,3,3,3,6,6,9],[0,6,6,6,12,12,18],[0,6,6,6,12,12,18],[1,7,8,9,18,18,22]]
],[
[1,0,0,0,0,0,0],[0,1,0,0,0,0,0],[0,0,1,0,0,0,0],[0,0,0,1,0,0,0],[0,0,0,0,1,0,0],[0,0,0,0,0,1,0],[0,0,0,0,0,0,1]],
[0,1,0,0,0,0,0],[1,0,0,1,2,2,3],[0,0,1,1,2,2,3],[0,1,1,1,2,2,3],[0,2,2,2,4,4,6],[0,2,2,2,4,4,6],[0,3,3,3,6,6,7]],
[0,0,1,0,0,0,0],[0,0,1,1,2,2,3],[1,1,1,1,2,2,3],[0,1,1,2,2,3],[0,2,2,2,5,4,6],[0,2,2,2,4,5,6],[0,3,3,3,6,6,8]],
[0,0,0,1,0,0,0],[0,1,1,1,2,2,3],[0,1,1,2,2,3],[1,1,2,2,0,4,3],[0,2,2,0,3,8,6],[0,2,2,4,8,1,6],[0,3,3,3,6,6,9]],
[0,0,0,0,1,0,0],[0,2,2,2,4,4,6],[0,2,2,2,5,4,6],[0,2,2,0,3,8,6],[1,4,5,3,5,15,12],[0,4,4,8,15,3,12],[0,6,6,6,12,12,18]],
[0,0,0,0,0,1,0],[0,2,2,2,4,4,6],[0,2,2,2,4,5,6],[0,2,2,4,8,1,6],[0,4,4,8,15,3,12],[1,4,5,1,3,18,12],[0,6,6,6,12,12,18]],
[0,0,0,0,0,0,1],[0,3,3,3,6,6,7],[0,3,3,3,6,6,8],[0,3,3,3,6,6,9],[0,6,6,6,12,12,18],[0,6,6,6,12,12,18],[1,7,8,9,18,18,22]]
]]

#r8d660t[[1, 1], [5, 2], [10, 2], [11, 1], [12, 2]]

S660=[[

[illegible]

```

[[1,0,0,0,0,0,0,0],[1,0,0,0,0,0,0,0],[0,0,1,0,0,0,0,1],[0,0,0,1,0,0,0,0],[0,0,0,0,1,0,0,0],[0,0,0,0,0,1,0,1],[0,0,0,0,0,0,0,1]],
[[1,0,1,0,0,0,0,0],[1,0,0,0,0,1,0,1],[0,0,1,0,0,1,0,1],[0,0,0,1,0,0,1,1],[0,0,0,0,0,0,2,1],[0,1,1,1,0,0,2,0],[0,0,0,0,2,0,3,2],[0,1,1,1,1,2,2,1]],
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[[0,0,0,0,1,0,0,0],[0,0,0,0,0,0,2,1],[0,0,0,0,1,0,2,1],[0,0,0,0,1,0,2,1],[1,0,1,1,2,3,0,1],[0,0,0,0,3,0,4,2],[0,2,2,2,0,4,1,4],[0,1,1,1,1,2,3,1]],
[[0,0,0,0,0,1,0,0],[0,1,1,1,0,2,0,2],[0,1,1,1,0,3,0,2],[0,1,1,1,0,3,0,2],[0,0,0,0,3,0,4,2],[1,2,3,3,0,6,0,4],[0,0,0,0,4,0,9,4],[0,2,2,2,2,4,4,5]],
[[0,0,0,0,0,0,1,0],[0,0,0,0,2,0,3,2],[0,0,0,0,2,0,4,2],[0,0,0,0,2,0,4,2],[0,2,2,2,0,4,1,4],[0,0,0,0,4,0,9,4],[1,3,4,4,1,9,2,7],[0,2,2,2,4,4,7,6]],
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],
[[1,0,0,0,0,0,0,0],[1,0,0,0,0,0,0,0],[0,0,1,0,0,0,0,0],[0,0,0,1,0,0,0,0],[0,0,0,0,1,0,0,0],[0,0,0,0,0,1,0,0],[0,0,0,0,0,0,1,0],[0,0,0,0,0,0,0,1]],
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[[0,0,0,0,0,0,0,1],[0,1,1,1,1,2,3,0],[0,1,1,1,1,2,3,1],[0,1,1,1,1,2,3,1],[0,1,1,1,1,2,3,4],[0,2,2,2,2,4,6,3],[0,3,3,3,3,6,9,2],[1,0,1,1,4,3,2,13]]

```


[illegible]

[illegible]

[1,0,0,0,0,0,0,0,1,0],[0,1,0,0,0,1,0,1,1,2],[0,0,1,1,1,1,1,1,2,3],[0,0,1,1,1,1,1,1,2,3],[0,1,1,1,3,1,2,2,4],[0,0,1,1,1,3,1,3,4],[0,1,1,1,2,1,2,2,5],[1,1,2,2,2,3,2,4,6],[0,2,3,3,4,4,5,6,10],
], [0,0,0,0,0,0,0,0,1],[0,0,1,1,1,1,1,2,3],[0,1,1,1,2,2,2,3,5],[0,1,1,1,2,2,2,3,5],[0,1,2,2,2,3,3,4,7],[0,1,2,2,3,2,3,4,7],[0,1,2,2,3,3,3,5,7],[0,2,3,3,4,4,5,6,10],[1,3,5,5,7,7,7,10,17]

[illegible]

[illegible]

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#r9d3420t[[1, 1], [9, 2], [19, 1], [20, 4], [36, 1]]
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[illegible]

9d3968[[[1, 1], [8, 2], [9, 1], [10, 1], [15, 2], [40, 2]]]
 S3960=[
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 [[0,0,0,1,0,0,0,0],[0,0,1,1,0,0,1,0],[1,0,1,0,0,0,1,0],[0,1,1,1,0,0,1,0],[0,0,0,0,1,0,0,1],[0,0,0,0,0,1,0,2],[0,1,1,1,0,0,2,0,2],[0,0,0,0,1,2,0,5,3],[0,1,1,1,1,2,3,4]],
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[illegible]

[0,1,0,0,0,0,0,0],[1,1,2,0,1,0,3,2,2],[0,2,0,0,1,1,2,2,2],[0,0,1,1,1,2,2,2,2],[0,1,1,1,1,2,2,2,2],[0,0,2,2,2,3,4,4,4],[0,3,1,2,2,4,2,4,4],[0,2,2,2,2,4,4,4,4],[0,2,2,2,2,4,4,4,4],[0,0,1,0,0,0,0,0],[1,1,2,0,1,1,2,2,2],[1,0,3,0,1,1,2,2,2],[0,1,0,1,1,2,2,2,2],[0,1,1,1,1,2,2,2,2],[0,2,2,2,2,4,4,4,4],[0,1,1,2,2,2,5,4,4],[0,1,1,2,2,2,4,4,4,4],[0,0,0,1,0,0,0,0],[0,0,1,1,1,2,2,2,2],[0,1,0,1,1,2,2,2,2],[1,1,1,1,1,2,2,2,2],[0,1,1,1,2,2,2,2,2],[0,2,2,2,2,3,4,4,4],[0,2,2,2,2,4,3,4,4],[0,2,2,2,2,4,4,5,4],[0,2,2,2,2,4,4,4,5],[0,0,0,0,1,0,0,0],[0,1,1,1,1,2,2,2,2],[0,1,1,1,1,2,2,2,2],[0,1,1,1,2,2,2,2,2],[0,2,2,2,2,4,4,4,4],[0,2,2,2,2,4,4,4,4],[0,2,2,2,2,4,4,4,9,2],[0,2,2,2,4,4,4,2,7],[0,0,0,0,0,1,0,0],[0,0,2,2,2,3,4,4,4],[0,2,2,2,2,3,4,4,4],[0,2,2,2,2,4,4,4,4],[1,3,4,3,4,6,7,8,8],[0,4,2,4,4,7,6,8,8],[0,4,4,4,4,8,8,8,8],[0,4,4,4,4,8,8,8,8],[0,0,0,0,0,1,0,0],[0,3,1,2,2,4,4,4,4],[0,1,1,2,2,5,4,4,4],[0,2,2,2,2,4,3,4,4],[0,2,2,2,2,4,4,4,4],[0,4,2,4,4,7,6,8,8],[1,2,5,3,4,6,7,8,8],[0,4,4,4,4,8,8,8,8],[0,4,4,4,4,8,8,8,8],[0,0,0,0,0,0,1,0],[0,2,2,2,2,4,4,4,4],[0,2,2,2,2,4,4,4,4],[0,2,2,2,2,4,4,5,4],[0,2,2,2,2,4,4,4,9,2],[0,4,4,4,4,8,8,8,8],[1,4,4,5,9,8,8,2,15],[0,4,4,4,2,8,8,15,6],[0,0,0,0,0,0,0,1],[0,2,2,2,2,4,4,4,4],[0,2,2,2,2,4,4,4,4],[0,2,2,2,2,4,4,4,5],[0,2,2,2,2,4,4,4,2,7],[0,4,4,4,4,8,8,8,8],[0,4,4,4,4,8,8,8,8],[0,4,4,4,2,8,8,15,6],[1,4,4,5,7,8,8,6,12]]
],l

[1,0,0,0,0,0,0,0],[0,1,0,0,0,0,0,0],[0,0,1,0,0,0,0,0],[0,0,0,1,0,0,0,0],[0,0,0,0,1,0,0,0],[0,0,0,0,0,1,0,0],[0,0,0,0,0,0,1,0],[0,0,0,0,0,0,0,1],[0,1,0,0,0,0,0,0],[1,1,2,0,1,1,2,2,2],[0,2,0,1,1,1,2,2,2],[0,0,1,1,1,2,2,2,2],[0,1,1,1,1,2,2,2,2],[0,1,2,2,2,3,4,4,4],[0,2,2,2,2,4,2,4,4],[0,2,2,2,2,4,4,4,4],[0,2,2,2,2,4,4,4,4],[0,0,1,0,0,0,0,0],[0,0,2,0,1,1,2,2,2],[1,0,3,0,1,1,2,2,2],[0,1,0,1,1,2,2,2,2],[0,1,1,1,1,2,2,2,2],[0,1,3,2,2,4,2,4,4],[0,2,0,2,2,2,5,4,4],[0,2,2,2,2,4,4,4,4],[0,0,0,1,0,0,0,0],[0,0,1,1,1,2,2,2,2],[0,1,0,1,1,2,2,2,2],[1,1,1,1,1,2,2,2,2],[0,1,1,1,2,2,2,2,2],[0,2,2,2,2,3,4,4,4],[0,2,2,2,2,4,3,4,4],[0,2,2,2,2,4,4,5,4],[0,2,2,2,2,4,4,4,5],[0,0,0,0,1,0,0,0],[0,1,1,1,1,2,2,2,2],[0,1,1,1,1,2,2,2,2],[0,1,1,1,2,2,2,2,2],[0,2,2,2,2,4,4,4,4],[0,2,2,2,2,4,4,4,4],[0,2,2,2,2,4,4,4,3,8],[0,2,2,2,4,4,4,8,1],[0,0,0,0,0,1,0,0],[0,1,1,2,2,3,4,4,4],[0,1,3,2,2,4,2,4,4],[0,2,2,2,2,3,4,4,4],[0,2,2,2,2,4,4,4,4],[1,3,4,3,4,7,6,8,8],[0,4,2,4,4,6,7,8,8],[0,4,4,4,4,8,8,8,8],[0,4,4,4,4,8,8,8,8]]

[illegible]


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A10d1638t[[1, 1], [6, 1], [7, 3], [13, 1], [14, 1], [18, 2], [21, 1]]
S1638=[[]
[[1,0,0,0,0,0,0,0,0],[0,1,0,0,0,0,0,0,0],[0,0,1,0,0,0,0,0,0],[0,0,0,1,0,0,0,0,0],[0,0,0,0,1,0,0,0,0],[0,0,0,0,0,1,0,0,0],[0,0,0,0,0,0,1,0,0],[0,0,0,0,0,0,0,1,0],[0,0,0,0,0,0,0,0,1],[0,0,0,0,0,0,0,0,0]]
[[1,0,0,0,0,0,0,0,0],[0,1,0,1,1,0,0,0,0],[0,1,0,0,0,0,0,1,0],[0,1,0,0,0,0,0,1,0],[0,1,0,0,0,0,0,1,0],[0,0,0,0,0,0,0,1,1,2],[0,1,0,0,0,0,0,1,1,2],[0,0,1,1,1,1,0,0,1,2],[0,0,1,1,1,1,1,0,0,2],[0,0,0,0,0,2,2,2,2,0]]
[[0,1,0,0,0,0,0,0,0],[0,1,0,0,0,0,0,1,1,0],[0,0,0,1,1,1,0,0,0,1],[0,0,1,1,0,0,1,0,0,1],[0,0,1,0,0,1,0,0,0,1],[0,0,1,0,0,1,1,1,1,1],[0,0,0,1,1,1,1,1,1,1],[0,1,0,0,0,1,1,2,2,1],[0,1,0,0,0,1,1,2,2,1],[0,0,1,1,1,1,1,1,1,3]]
[[0,0,0,1,0,0,0,0,0,0],[0,1,0,0,0,0,0,1,1,0],[0,0,1,1,0,0,0,1,0,0,1],[0,0,0,1,0,1,1,0,0,0,1],[0,0,0,1,0,1,1,1,1,1],[0,0,1,0,0,1,1,1,1,1],[0,0,1,0,0,1,1,1,1,1],[0,1,0,0,0,1,1,2,2,1],[0,1,0,0,0,1,1,2,2,1],[0,0,1,1,1,1,1,1,1,3]]
[[0,0,0,0,1,0,0,0,0,0],[0,1,0,0,0,0,0,1,1,0],[0,0,1,0,0,1,0,0,0,1],[0,0,0,1,0,1,0,0,0,1],[0,0,0,1,0,1,1,1,1,1],[0,0,0,1,0,1,1,1,1,1],[0,0,0,1,0,1,1,1,1,1],[0,0,1,0,0,1,1,2,2,1],[0,1,0,0,0,1,1,2,2,1],[0,0,1,1,1,1,1,1,1,3]]
[[0,0,0,0,0,0,1,0,0,0],[0,1,0,0,0,0,0,1,1,2],[0,0,0,1,0,0,0,1,1,1,1],[0,0,0,1,0,0,0,1,1,1,1],[0,0,0,1,0,0,0,1,1,1,1],[0,0,0,1,0,0,0,1,1,1,1],[0,0,0,1,0,0,0,1,1,1,1],[0,0,1,1,1,2,2,2,2,1],[0,0,1,1,1,2,2,2,2,1],[0,1,1,1,2,2,2,2,3,3],[0,1,1,1,2,2,2,2,3,3],[0,2,1,1,1,1,2,2,3,5],[0,2,1,1,1,1,1,3,3,6]]
[[0,0,0,0,0,0,0,1,0,0],[0,0,1,1,1,1,0,0,1,2],[0,1,0,0,0,0,1,1,2,2,1],[0,1,0,0,0,0,1,1,2,2,1],[0,1,0,0,0,0,1,1,2,2,1],[0,1,1,1,2,2,2,3,3,3],[0,1,1,1,2,2,3,3,3,3],[0,1,2,2,2,3,3,5,5],[0,1,2,2,2,3,3,5,5],[0,2,1,1,1,3,3,5,5,4]]
[[0,0,0,0,0,0,0,0,1,0],[0,0,1,1,1,1,1,0,0,2],[0,1,0,0,0,0,1,1,2,2,1],[0,1,0,0,0,0,1,1,2,2,1],[0,1,0,0,0,0,1,1,2,2,1],[0,1,1,1,1,2,2,3,3,3],[0,1,1,1,1,2,2,3,3,3],[0,1,2,2,2,3,3,5,5],[0,1,2,2,2,3,3,5,5],[0,2,1,1,1,3,3,5,5,4]]

```


[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

```
#r10d4620t[[1, 1], [11, 2], [20, 5], [21, 1], [44, 1]]
```

S4620=[[

#[0,1,2,3,4,5,6,7,8,9]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

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[illegible]

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[illegible]

[illegible]

[illegible]

[illegible]

BL=[S60,S168,S210,S360,S7980,S660,S990,S1260,S1320,S504,S1092,S1320b,S1512,S2520,S2730,S3420,S3960,S7980b,S8736,S720,S1638,S1680,S1716,S2184,S2640,S3366,S4620,S720b,S990b,S2184b,S2448]

```
sage: for i in range(31):
.....:     for j in range(L[i]):
.....:         if not Burnside(BL[i][j]):
.....:             print([i,j])
.....:
[13, 2]
[13, 3]
[13, 7]
[13, 8]
```


