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19/18 2027
BE CMPNA.

BDA - IAT2

Q2]

A] S = 4, 7, 5, 1, 2, 7, 6.
h(x) = (3x + 1) mod 7.

Flajolet Martin algorithm needs to be applied.
Passing stream through the hash:-
The stream becomes,
(3 X 4 + 1) mod 7 = 6
(3 X 7 + 1) mod 7 = 1
(3 X 5 + 1) mod 7 = 2
(3 X 1 + 1) mod 7 = 4
(3 X 2 + 1) mod 7 = 0
(3 X 7 + 1) mod 7 = 1
(3 X 6 + 1) mod 7 = 5

6, 1, 2, 4, 0, 1, 5
Binary:- 110, 001, 010, 100, 000, 001, 101
∴ r(a) = 1, 0, 1, 2, 0, 0, 0
∴ R = max (r(a)) = 2
∴ Distinct element = $2^R = 2^2 = 4$
∴ There are 4 distinct elements.