AI1110 ASSIGNMENT-8

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***Abstract*—This document contains the solution for Assignment 8 (papoulis ch2 problem-2.20)**

QUESTION 2.20 : A player tosses a penny from a distange onto the surface of a square table ruled in 1 in. squares. If the penny is $\frac{3}{4}$ in. in diameter, what is the probability that it will fall entirely inside a square (assuming that the penny lands on the table).
Solution : here as long as the centre is r units away from the sides of the square it will stay inside the square and that is our question requirement.

so there's a small square of side length d - 2r in each square where the center can fall without the coin extending beyond the grid square. so the desired probability will be :

$$= \frac{(1-2r)^2}{1^2} \tag{1}$$

$$= (1-\frac{3}{4})^2 \tag{2}$$

$$= \frac{1}{16} \tag{3}$$