**Practical : 16**

**CODE:**

#include <stdio.h>

// Function to multiply two matrices: A (1x2), B (2x2), Result (1x2)

void Mmul(float A[1][2], float B[2][2], float Result[1][2]) {

for (int i = 0; i < 1; i++) {

for (int j = 0; j < 2; j++) {

Result[i][j] = 0;

for (int k = 0; k < 2; k++) {

Result[i][j] += A[i][k] \* B[k][j];

}

}

}

}

int main() {

// Transition probability matrix T

float T[2][2] = {

{0.8, 0.2}, // From Maths

{0.7, 0.3} // From English

};

// Initial state vector IS (1x2)

float IS[1][2] = { {60, 40} };

// Arrays to hold intermediate and final results

float S\_aftr[1][2];

float S\_sftr[1][2];

// First multiplication: IS \* T -> S\_aftr

Mmul(IS, T, S\_aftr);

// Second multiplication: S\_aftr \* T -> S\_sftr

Mmul(S\_aftr, T, S\_sftr);

// Print results after two periods

printf("Number of students doing Maths after two periods: %.2f\n", S\_sftr[0][0]);

printf("Number of students doing English after two periods: %.2f\n", S\_sftr[0][1]);

return 0;

}

**OUTPUT:**

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