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| **NAME:** | Vinit Madhyan |
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| **SUBJECT** | DAA |
| **EXPERIMENT NO:** | 3 |
| **AIM:** | To understand and implement Strassen’s Matrix Multiplication. |
| **Algorithm:** | 1. Start 2. Declare two matrices A and B and take the values from the user. 3. Find S1 to S10 using provided formulae. 4. Find P1 to P7 using provided formulae. 5. Find the elements of matrix C which is the multiplication of A and B.   Print the result. |
| **Code:** | *#include* <iostream>  *#include* <fstream>  *#include* <cstdlib>  *#include* <ctime>  using namespace std;  void solution(int A[][2], int B[][2])  {      int c[2][2];      int s1 = B[0][1] - B[1][1];      int s2 = A[0][0] + A[0][1];      int s3 = A[1][0] + A[1][1];      int s4 = B[1][0] - B[0][0];      int s5 = A[0][0] + A[1][1];      int s6 = B[0][0] + B[1][1];      int s7 = A[0][1] - A[1][1];      int s8 = B[1][0] + B[1][1];      int s9 = A[0][0] - A[1][0];      int s10 = B[0][0] + B[0][1];      int p1 = A[0][0] \* s1;      int p2 = s2 \* B[1][1];      int p3 = s3 \* B[0][0];      int p4 = A[1][1] \* s4;      int p5 = s5 \* s6;      int p6 = s7 \* s8;      int p7 = s9 \* s10;      c[0][0] = p5 + p4 - p2 + p6;      c[0][1] = p1 + p2;      c[1][0] = p3 + p4;      c[1][1] = p5 + p1 - p3 - p7;      cout << "Matrix Multiplication of Aand B is  " << endl;  *for* (int i = 0; i < 2; i++)      {  *for* (int j = 0; j < 2; j++)          {              cout << c[i][j] << " ";          }          cout << endl;      }  }  int main()  {      clock\_t t1, t2;      int A[2][2], B[2][2];      cout << "enter elements of matrix A  ";  *for* (int i = 0; i < 2; i++)      {  *for* (int j = 0; j < 2; j++)          {              cin >> A[i][j];          }      }      cout << "enter elements of matrix B  ";  *for* (int i = 0; i < 2; i++)      {  *for* (int j = 0; j < 2; j++)          {              cin >> B[i][j];          }      }      cout << "Matrix A  " << endl;  *for* (int i = 0; i < 2; i++)      {  *for* (int j = 0; j < 2; j++)          {              cout << A[i][j] << " ";          }          cout << endl;      }      cout << "Matrix B  " << endl;  *for* (int i = 0; i < 2; i++)      {  *for* (int j = 0; j < 2; j++)          {              cout << B[i][j] << " ";          }          cout << endl;      }      t1 = clock();      solution(A, B);      t2 = clock();      double time = double(t2 - t1) / double(CLOCKS\_PER\_SEC);      cout << endl;      cout << " time requried is " << fixed << time;  *return* 0;  } |
| **Graphs and Observation:** |  |
| **Conclusion:** | With the help of this experiment, I was successfully able to understand and implement the concept of Strassen’s multiplication. |