**Exercise 8. Answer Sheet**

Student's Name: Tomonori Masubuchi Student's ID: s1240078

***Problem 1.***  Write pseudo-code for the Strassen's algorithm.

Put your answer heref

for i 1 to n

do for j 1 to n

do cij 0

for k 1 to n

do cij ← cij+aik\*bkj

***Problem 2.*** Use Strassen's algorithm to compute the matrix product:

Show your work below:

C\_{11} = P\_1 + P\_4 - P\_5 + P\_7 =18

C\_{12} = P\_3 + P\_5=14

C\_{21} = P\_2 + P\_4=62

C\_{22} = P\_1 + P\_3 - P\_2 + P\_6=66

C=(18 14)

(62 66)

***Problem 3.*** Make two programs implementing the Recursive matrix multiplication and the Strassen's algorithm. Upload your code. Generate two random matrices A and B of size n×n, multiply them using your programs and measure the time needed to get the result. Fill the following table:

Time needed to multiply two n×n matrices. (May depend on the programming language, computer, etc.)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Algorithm | n | | | | | |
| 32 | 64 | 128 | 256 | 512 | 1024 |
| Recursive (sec) |  |  |  |  |  |  |
| Strassen (sec) |  |  |  |  |  |  |