

File - main

```
/Users/mingyupark/PycharmProjects/NPU_PE_array_simulator/venv/bin/python  
/Users/mingyupark/PycharmProjects/NPU_PE_array_simulator/main.py  
Start the Convolution Computation by matrix multiplication
```

Weight Matrix :

```
[[ 1  2  3 ... 25 26 27]  
 [ 28 29 30 ... 52 53 54]  
 [ 55 56 57 ... 79 80 81]  
 ...  
 [1648 1649 1650 ... 1672 1673 1674]  
 [1675 1676 1677 ... 1699 1700 1701]  
 [1702 1703 1704 ... 1726 1727 1728]]
```

Input Matrix :

```
[[ 1  2  3  4  5  6  7  8  9 10 11 12 13 14 15 16]  
 [ 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32]  
 [ 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48]  
 [ 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64]  
 [ 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80]  
 [ 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96]  
 [ 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112]  
 [113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128]  
 [129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144]  
 [145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160]  
 [161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176]  
 [177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192]  
 [193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208]  
 [209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224]  
 [225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240]  
 [241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256]  
 [257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272]  
 [273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288]  
 [289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 304]  
 [305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320]  
 [321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336]  
 [337 338 339 340 341 342 343 344 345 346 347 348 349 350 351 352]  
 [353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368]  
 [369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384]  
 [385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400]  
 [401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416]  
 [417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432]]
```

You have a nice SRAM

Output Matrix :

```
00 : 105210.00 105588.00 105966.00 106344.00 106722.00 107100.00 107478.  
00 107856.00 108234.00 108612.00 108990.00 109368.00 109746.00 110124.00  
110502.00 110880.00  
01 : 257571.00 258678.00 259785.00 260892.00 261999.00 263106.00 264213.  
00 265320.00 266427.00 267534.00 268641.00 269748.00 270855.00 271962.00  
273069.00 274176.00
```

02 : 409932.00 411768.00 413604.00 415440.00 417276.00 419112.00 420948.
00 422784.00 424620.00 426456.00 428292.00 430128.00 431964.00 433800.00
435636.00 437472.00
03 : 562293.00 564858.00 567423.00 569988.00 572553.00 575118.00 577683.
00 580248.00 582813.00 585378.00 587943.00 590508.00 593073.00 595638.00
598203.00 600768.00
04 : 714654.00 717948.00 721242.00 724536.00 727830.00 731124.00 734418.
00 737712.00 741006.00 744300.00 747594.00 750888.00 754182.00 757476.00
760770.00 764064.00
05 : 867015.00 871038.00 875061.00 879084.00 883107.00 887130.00 891153.
00 895176.00 899199.00 903222.00 907245.00 911268.00 915291.00 919314.00
923337.00 927360.00
06 : 1019376.00 1024128.00 1028880.00 1033632.00 1038384.00 1043136.00
1047888.00 1052640.00 1057392.00 1062144.00 1066896.00 1071648.00 1076400
.00 1081152.00 1085904.00 1090656.00
07 : 1171737.00 1177218.00 1182699.00 1188180.00 1193661.00 1199142.00
1204623.00 1210104.00 1215585.00 1221066.00 1226547.00 1232028.00 1237509
.00 1242990.00 1248471.00 1253952.00
08 : 1324098.00 1330308.00 1336518.00 1342728.00 1348938.00 1355148.00
1361358.00 1367568.00 1373778.00 1379988.00 1386198.00 1392408.00 1398618
.00 1404828.00 1411038.00 1417248.00
09 : 1476459.00 1483398.00 1490337.00 1497276.00 1504215.00 1511154.00
1518093.00 1525032.00 1531971.00 1538910.00 1545849.00 1552788.00 1559727
.00 1566666.00 1573605.00 1580544.00
10 : 1628820.00 1636488.00 1644156.00 1651824.00 1659492.00 1667160.00
1674828.00 1682496.00 1690164.00 1697832.00 1705500.00 1713168.00 1720836
.00 1728504.00 1736172.00 1743840.00
11 : 1781181.00 1789578.00 1797975.00 1806372.00 1814769.00 1823166.00
1831563.00 1839960.00 1848357.00 1856754.00 1865151.00 1873548.00 1881945
.00 1890342.00 1898739.00 1907136.00
12 : 1933542.00 1942668.00 1951794.00 1960920.00 1970046.00 1979172.00
1988298.00 1997424.00 2006550.00 2015676.00 2024802.00 2033928.00 2043054
.00 2052180.00 2061306.00 2070432.00
13 : 2085903.00 2095758.00 2105613.00 2115468.00 2125323.00 2135178.00
2145033.00 2154888.00 2164743.00 2174598.00 2184453.00 2194308.00 2204163
.00 2214018.00 2223873.00 2233728.00
14 : 2238264.00 2248848.00 2259432.00 2270016.00 2280600.00 2291184.00
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.00 2375856.00 2386440.00 2397024.00
15 : 2390625.00 2401938.00 2413251.00 2424564.00 2435877.00 2447190.00
2458503.00 2469816.00 2481129.00 2492442.00 2503755.00 2515068.00 2526381
.00 2537694.00 2549007.00 2560320.00
16 : 2542986.00 2555028.00 2567070.00 2579112.00 2591154.00 2603196.00
2615238.00 2627280.00 2639322.00 2651364.00 2663406.00 2675448.00 2687490
.00 2699532.00 2711574.00 2723616.00
17 : 2695347.00 2708118.00 2720889.00 2733660.00 2746431.00 2759202.00
2771973.00 2784744.00 2797515.00 2810286.00 2823057.00 2835828.00 2848599
.00 2861370.00 2874141.00 2886912.00
18 : 2847708.00 2861208.00 2874708.00 2888208.00 2901708.00 2915208.00
2928708.00 2942208.00 2955708.00 2969208.00 2982708.00 2996208.00 3009708
.00 3023208.00 3036708.00 3050208.00
19 : 3000069.00 3014298.00 3028527.00 3042756.00 3056985.00 3071214.00
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.00 3185046.00 3199275.00 3213504.00
20 : 3152430.00 3167388.00 3182346.00 3197304.00 3212262.00 3227220.00
3242178.00 3257136.00 3272094.00 3287052.00 3302010.00 3316968.00 3331926
.00 3346884.00 3361842.00 3376800.00
21 : 3304791.00 3320478.00 3336165.00 3351852.00 3367539.00 3383226.00
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.00 3508722.00 3524409.00 3540096.00
22 : 3457152.00 3473568.00 3489984.00 3506400.00 3522816.00 3539232.00
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23 : 3609513.00 3626658.00 3643803.00 3660948.00 3678093.00 3695238.00
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24 : 3761874.00 3779748.00 3797622.00 3815496.00 3833370.00 3851244.00
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25 : 3914235.00 3932838.00 3951441.00 3970044.00 3988647.00 4007250.00
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26 : 4066596.00 4085928.00 4105260.00 4124592.00 4143924.00 4163256.00
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27 : 4218957.00 4239018.00 4259079.00 4279140.00 4299201.00 4319262.00
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28 : 4371318.00 4392108.00 4412898.00 4433688.00 4454478.00 4475268.00
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29 : 4523679.00 4545198.00 4566717.00 4588236.00 4609755.00 4631274.00
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30 : 4676040.00 4698288.00 4720536.00 4742784.00 4765032.00 4787280.00
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31 : 4828401.00 4851378.00 4874355.00 4897332.00 4920309.00 4943286.00
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32 : 4980762.00 5004468.00 5028174.00 5051880.00 5075586.00 5099292.00
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33 : 5133123.00 5157558.00 5181993.00 5206428.00 5230863.00 5255298.00
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34 : 5285484.00 5310648.00 5335812.00 5360976.00 5386140.00 5411304.00
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35 : 5437845.00 5463738.00 5489631.00 5515524.00 5541417.00 5567310.00
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36 : 5590206.00 5616828.00 5643450.00 5670072.00 5696694.00 5723316.00
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37 : 5742567.00 5769918.00 5797269.00 5824620.00 5851971.00 5879322.00

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38 : 5894928.00 5923008.00 5951088.00 5979168.00 6007248.00 6035328.00
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39 : 6047289.00 6076098.00 6104907.00 6133716.00 6162525.00 6191334.00
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40 : 6199650.00 6229188.00 6258726.00 6288264.00 6317802.00 6347340.00
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.00 6583644.00 6613182.00 6642720.00
41 : 6352011.00 6382278.00 6412545.00 6442812.00 6473079.00 6503346.00
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42 : 6504372.00 6535368.00 6566364.00 6597360.00 6628356.00 6659352.00
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.00 6907320.00 6938316.00 6969312.00
43 : 6656733.00 6688458.00 6720183.00 6751908.00 6783633.00 6815358.00
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.00 7069158.00 7100883.00 7132608.00
44 : 6809094.00 6841548.00 6874002.00 6906456.00 6938910.00 6971364.00
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.00 7230996.00 7263450.00 7295904.00
45 : 6961455.00 6994638.00 7027821.00 7061004.00 7094187.00 7127370.00
7160553.00 7193736.00 7226919.00 7260102.00 7293285.00 7326468.00 7359651
.00 7392834.00 7426017.00 7459200.00
46 : 7113816.00 7147728.00 7181640.00 7215552.00 7249464.00 7283376.00
7317288.00 7351200.00 7385112.00 7419024.00 7452936.00 7486848.00 7520760
.00 7554672.00 7588584.00 7622496.00
47 : 7266177.00 7300818.00 7335459.00 7370100.00 7404741.00 7439382.00
7474023.00 7508664.00 7543305.00 7577946.00 7612587.00 7647228.00 7681869
.00 7716510.00 7751151.00 7785792.00
48 : 7418538.00 7453908.00 7489278.00 7524648.00 7560018.00 7595388.00
7630758.00 7666128.00 7701498.00 7736868.00 7772238.00 7807608.00 7842978
.00 7878348.00 7913718.00 7949088.00
49 : 7570899.00 7606998.00 7643097.00 7679196.00 7715295.00 7751394.00
7787493.00 7823592.00 7859691.00 7895790.00 7931889.00 7967988.00 8004087
.00 8040186.00 8076285.00 8112384.00
50 : 7723260.00 7760088.00 7796916.00 7833744.00 7870572.00 7907400.00
7944228.00 7981056.00 8017884.00 8054712.00 8091540.00 8128368.00 8165196
.00 8202024.00 8238852.00 8275680.00
51 : 7875621.00 7913178.00 7950735.00 7988292.00 8025849.00 8063406.00
8100963.00 8138520.00 8176077.00 8213634.00 8251191.00 8288748.00 8326305
.00 8363862.00 8401419.00 8438976.00
52 : 8027982.00 8066268.00 8104554.00 8142840.00 8181126.00 8219412.00
8257698.00 8295984.00 8334270.00 8372556.00 8410842.00 8449128.00 8487414
.00 8525700.00 8563986.00 8602272.00
53 : 8180343.00 8219358.00 8258373.00 8297388.00 8336403.00 8375418.00
8414433.00 8453448.00 8492463.00 8531478.00 8570493.00 8609508.00 8648523
.00 8687538.00 8726553.00 8765568.00
54 : 8332704.00 8372448.00 8412192.00 8451936.00 8491680.00 8531424.00
8571168.00 8610912.00 8650656.00 8690400.00 8730144.00 8769888.00 8809632
.00 8849376.00 8889120.00 8928864.00

File - main

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55 : 8485065.00 8525538.00 8566011.00 8606484.00 8646957.00 8687430.00
8727903.00 8768376.00 8808849.00 8849322.00 8889795.00 8930268.00 8970741
.00 9011214.00 9051687.00 9092160.00
56 : 8637426.00 8678628.00 8719830.00 8761032.00 8802234.00 8843436.00
8884638.00 8925840.00 8967042.00 9008244.00 9049446.00 9090648.00 9131850
.00 9173052.00 9214254.00 9255456.00
57 : 8789787.00 8831718.00 8873649.00 8915580.00 8957511.00 8999442.00
9041373.00 9083304.00 9125235.00 9167166.00 9209097.00 9251028.00 9292959
.00 9334890.00 9376821.00 9418752.00
58 : 8942148.00 8984808.00 9027468.00 9070128.00 9112788.00 9155448.00
9198108.00 9240768.00 9283428.00 9326088.00 9368748.00 9411408.00 9454068
.00 9496728.00 9539388.00 9582048.00
59 : 9094509.00 9137898.00 9181287.00 9224676.00 9268065.00 9311454.00
9354843.00 9398232.00 9441621.00 9485010.00 9528399.00 9571788.00 9615177
.00 9658566.00 9701955.00 9745344.00
60 : 9246870.00 9290988.00 9335106.00 9379224.00 9423342.00 9467460.00
9511578.00 9555696.00 9599814.00 9643932.00 9688050.00 9732168.00 9776286
.00 9820404.00 9864522.00 9908640.00
61 : 9399231.00 9444078.00 9488925.00 9533772.00 9578619.00 9623466.00
9668313.00 9713160.00 9758007.00 9802854.00 9847701.00 9892548.00 9937395
.00 9982242.00 10027089.00 10071936.00
62 : 9551592.00 9597168.00 9642744.00 9688320.00 9733896.00 9779472.00
9825048.00 9870624.00 9916200.00 9961776.00 10007352.00 10052928.00
10098504.00 10144080.00 10189656.00 10235232.00
63 : 9703953.00 9750258.00 9796563.00 9842868.00 9889173.00 9935478.00
9981783.00 10028088.00 10074393.00 10120698.00 10167003.00 10213308.00
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dram_to_sram_cycle : 540
sram_to_dram_cycle : 256
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Process finished with exit code 0