```
1 /Users/rr/CLionProjects/Assignment3-Bernardi-Buoso-
   Benetollo/cmake-build-debug/
   Assignment3 Bernardi Buoso Benetollo --std=c++11
2 Test 1 sequential
3 0 1 2 3
4 Number of threads: 1
5 here the result of [t2(j,i) = t1(i,j)];
6 0 2 1 3
7 Test 1 parallel
8 0 1 2 3
9 Number of threads: 8
10 here the result of [t2(j,i) = t1(i,j)];
11 0 2 1 3
12
13 Test 2 sequential
14 0 1 2 3
15 0 1 2 3 4 5 6 7
16 Number of threads: 1
17 here the result of [t4(i) = t3(i,j,k)*t1(j,k)+t3(i,k,k)];
18 20 60
19 Test 2 parallel
20 0 1 2 3
21 0 1 2 3 4 5 6 7
22 Number of threads: 8
23 here the result of [t4(i) = t3(i,j,k)*t1(j,k)+t3(i,k,k)];
24 20 60
25
26 Test 3 sequential
27 0 1 2 3
28 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
29 Number of threads: 1
30 here the result of [t4(i,j) = t1(i,j) - t3(i,j,k,k)];
31 -3 -9 -15 -21
32 Test 3 parallel
33 0 1 2 3
34 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
35 Number of threads: 8
36 here the result of [t4(i,j) = t1(i,j) - t3(i,j,k,k)];
37 -3 -9 -15 -21
38
39 Test 4 sequential
40 Number of threads: 1
41 here the result of [t2(i,j) = t1(i,k)*t1(k,j)];
42 2 3 6 11
43 Test 4 parallel
44 Number of threads: 8
45 here the result of [t2(i,j) = t1(i,k)*t1(k,j)];
46 2 3 6 11
47
48 Test 5 sequential
```

```
49 Number of threads: 1
50 here the result of [t1(i,j) = t3(i,j,k,k)+t4(i,k,k,j)];
51 0 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
52 Test 5 parallel
53 Number of threads: 8
54 here the result of [t1(i,j) = t3(i,j,k,k)+t4(i,k,k,j)];
55 0 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
56
57 Test 6 sequential
58 Number of threads: 1
59 here the result of [t2(i,k) = t3(i,j,j)*t4(k)];
60 0 3 0 11
61 Test 6 parallel
62 Number of threads: 8
63 here the result of [t2(i,k) = t3(i,j,j)*t4(k)];
64 0 3 0 11
65
66 Test 7 sequential
67 Number of threads: 1
68 here the result of [t5=t1(i,j)];
69 1 1 1 1
70 Test 7 parallel
71 Number of threads: 8
72 here the result of [t5=t1(i,j)];
73 1 1 1 1
74
75 Test 8 sequential
76 0 2
77 Number of threads: 1
78 here the result of [t6=t3(i,j,k)*t4(j)];
79 2 3 6 7
80 Test 8 parallel
81 0 2
82 Number of threads: 8
83 here the result of [t6=t3(i,j,k)*t4(j)];
84 2 3 6 7
85
86 Test 9 sequential
87 Number of threads: 1
88 here the result of [t6(k)=t1(k,j)*t1(i,i)*t2(j,j)*t2(j,j)*
   t1(i,i)*t2(j,j)*t2(j,j)*t1(i,i)*t2(j,j)*t2(j,j)*t1(i,i)];
89 59049 177147
90 Test 9 parallel
91 Number of threads: 8
```

```
92 here the result of [t6(k)=t1(k,j)*t1(i,i)*t2(j,j)*t2(j,j)*
                 t1(i,i)*t2(j,j)*t2(j,j)*t1(i,i)*t2(j,j)*t2(j,j)*t1(i,i)];
    93 59049 177147
    94
    95 Test 10 sequential
    96 Number of threads: 1
    97 here the result of [t6(k)=t1(k,j)*t1(i,i)*t2(j,j)*t2(j,j)*
                t1(i,i)*t2(j,j)*t2(j,j)*t1(i,i)*t2(j,j)*t2(j,j)*t1(i,i)*t1
                 (i,i)*t2(j,j)*t1(i,i)*t2(j,j)*t2(j,j)*t1(i,i)*t1(i,i)*t2(j,j)
                 ,j)*t2(j,j)*t1(i,i)*t2(j,j)*t2(j,j)*t1(i,i)];
    98 here the result;
   99 4 4
100 Test 10 parallel
101 Number of threads: 8
102 here the result of [t6(k)=t1(k,j)*t1(i,i)*t2(j,j)*t2(j,j)*
                t1(i,i)*t2(j,j)*t2(j,j)*t1(i,i)*t2(j,j)*t2(j,j)*t1(i,i)*t1
                 (i,i)*t2(j,j)*t1(i,i)*t2(j,j)*t2(j,j)*t1(i,i)*t1(i,i)*t2(j,j)
                 ,j)*t2(j,j)*t1(i,i)*t2(j,j)*t2(j,j)*t1(i,i)];
103 here the result;
104 4 4
105
106 Test 11 sequential
107 Number of threads: 1
108 here the result of [t6(k)=t1(k,j)*t1(i,i)*t2(j,j)*t2(j,j)*
                t1(i,i)*t2(j,j)*t2(j,j)*t1(i,i)*t2(j,j)*t2(j,j)*t1(i,i)*t1
                 (i,i)*t2(j,j)*t1(i,i)*t2(j,j)*t2(j,j)*t1(i,i)*t1(i,i)*t2(j,j)*t1(i,i)*t2(j,j)*t1(i,i)*t2(j,j)*t1(i,i)*t2(j,j)*t1(i,i)*t2(j,j)*t1(i,i)*t2(j,j)*t1(i,i)*t2(j,j)*t1(i,i)*t2(j,j)*t1(i,i)*t2(j,j)*t1(i,i)*t2(j,j)*t1(i,i)*t2(j,j)*t1(i,i)*t2(j,j)*t1(i,i)*t2(j,j)*t1(i,i)*t2(j,j)*t1(i,i)*t2(j,j)*t1(i,i)*t2(j,j)*t1(i,i)*t1(i,i)*t2(j,j)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i
                 ,j)*t2(j,j)*t1(i,i)*t2(j,j)*t2(j,j)*t1(i,i)+t1(k,j)*t1(i,i
                 *t2(j,j)*t2(j,j)*t1(i,i)*t2(j,j)*t2(j,j)*t1(i,i)*t2(j,j)*
                t2(j,j)*t1(i,i)*t1(i,i)*t2(j,j)*t1(i,i)*t2(j,j)*t1
                 (i,i)*t1(i,i)*t2(j,j)*t2(j,j)*t1(i,i)*t2(j,j)*t2(j,j)*t1(i,i)*t2(j,j)*t1(i,i)*t2(j,j)*t1(i,i)*t2(j,j)*t1(i,i)*t2(j,j)*t1(i,i)*t2(j,j)*t1(i,i)*t2(j,j)*t1(i,i)*t2(j,j)*t1(i,i)*t2(j,j)*t1(i,i)*t2(j,j)*t1(i,i)*t2(j,j)*t1(i,i)*t2(j,j)*t1(i,i)*t2(j,j)*t1(i,i)*t2(j,j)*t1(i,i)*t2(j,j)*t1(i,i)*t2(j,j)*t1(i,i)*t1(i,i)*t2(j,j)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i
                 ,i)];
109 8 8
110 Test 11 parallel
111 Number of threads: 8
112 here the result of [t6(k)=t1(k,j)*t1(i,i)*t2(j,j)*t2(j,j)*
                t1(i,i)*t2(j,j)*t2(j,j)*t1(i,i)*t2(j,j)*t2(j,j)*t1(i,i)*t1
                 (i,i)*t2(j,j)*t1(i,i)*t2(j,j)*t2(j,j)*t1(i,i)*t1(i,i)*t2(j
                 ,j)*t2(j,j)*t1(i,i)*t2(j,j)*t2(j,j)*t1(i,i)+t1(k,j)*t1(i,i
                 *t2(j,j)*t2(j,j)*t1(i,i)*t2(j,j)*t2(j,j)*t1(i,i)*t2(j,j)*
                t2(j,j)*t1(i,i)*t1(i,i)*t2(j,j)*t1(i,i)*t2(j,j)*t2(j,j)*t1
                 (i,i)*t1(i,i)*t2(j,j)*t2(j,j)*t1(i,i)*t2(j,j)*t2(j,j)*t1(i,i)*t2(j,j)*t1(i,i)*t2(j,j)*t1(i,i)*t2(j,j)*t1(i,i)*t2(j,j)*t1(i,i)*t2(j,j)*t1(i,i)*t2(j,j)*t1(i,i)*t2(j,j)*t1(i,i)*t2(j,j)*t1(i,i)*t2(j,j)*t1(i,i)*t2(j,j)*t1(i,i)*t2(j,j)*t1(i,i)*t2(j,j)*t1(i,i)*t2(j,j)*t1(i,i)*t2(j,j)*t1(i,i)*t2(j,j)*t1(i,i)*t1(i,i)*t2(j,j)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i)*t1(i,i
                 ,i)];
113 8 8
114
115 Test 12 sequential
116 Number of threads: 1
117 Elapsed time in milliseconds: 3 ms: 3129 µs
118 Test 12 parallel
119 Number of threads: 8
120 Elapsed time in milliseconds : 4 ms : 4213 μs
```

```
121
122 Test 13 sequential
123 Number of threads: 1
124 Elapsed time in milliseconds : 41 ms : 41016 μs
125 Test 13 parallel
126 Number of threads: 8
127 Elapsed time in milliseconds : 16 ms : 16725 \mus
128
129 Test 14 sequential
130 Number of threads: 1
131 Elapsed time in seconds : 1 sec : 1065971 \mu s
132 Test 14 parallel
133 Number of threads: 8
134 Elapsed time in milliseconds : 645 ms : 645266 μs
135
136 Test 15 sequential
137 Number of threads: 1
138 Elapsed time in milliseconds : 139 ms : 139582 μs
139 Test 15 parallel
140 Number of threads: 8
141 Elapsed time in milliseconds : 16 ms : 16166 \mus
142
143 Test 16 sequential
144 Number of threads: 1
145 Elapsed time in seconds : 41 sec : 41775003 \mu s
146 Test 16 parallel
147 Number of threads: 8
148 Elapsed time in seconds : 13 sec : 13088611 μs
149
150
151 Process finished with exit code 0
152
```