The time of writing the exam is 62 minutes and 19 seconds. Good luck! ————————————————————

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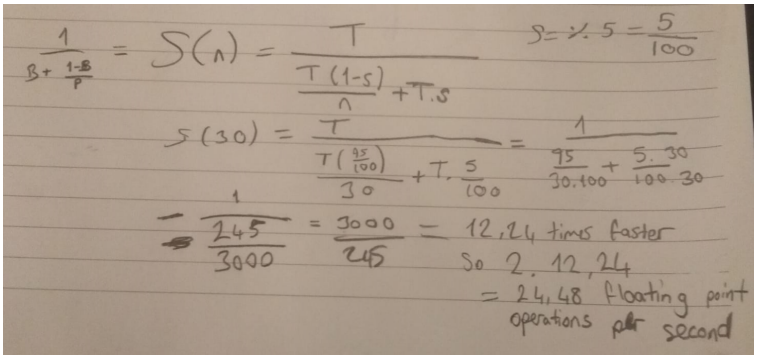
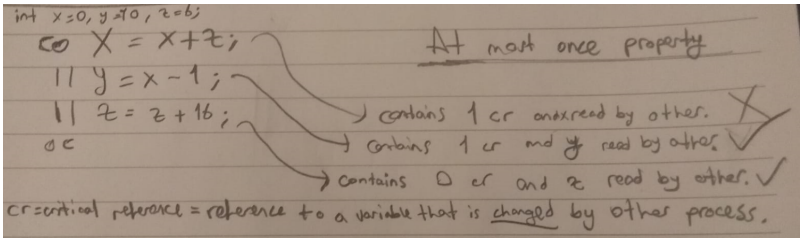
**1. naloga:** Take the multiprocessor with 30 processors, each processor is capable od max 2Gflops. What is the maximum capability of the multiprocessor for the execution of an application that has 5% sequential code?



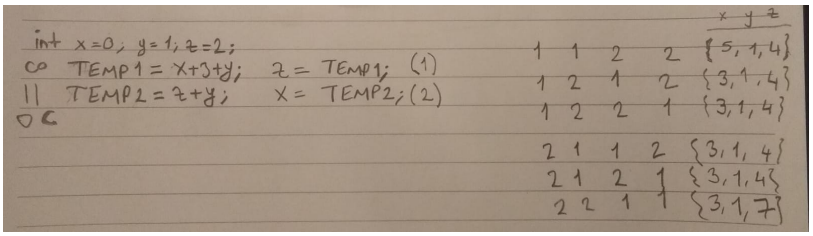

**2. naloga:** Give the definition of one-time property, for each thread prove if this property holds:

```
int x = 0, y = 10, z = 6
co x = x + z;
|| y = x - 1;
|| z = z + 16;
oc
```




**3. naloga:**

```
int x = 0;y=1;z=2;
co z = x + 3 + y;
|| x = z + y;
oc
```

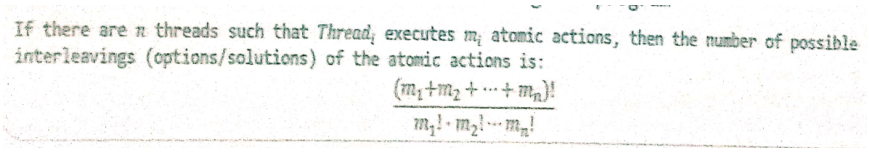



List all possible program paths and for each group of paths list the final values.

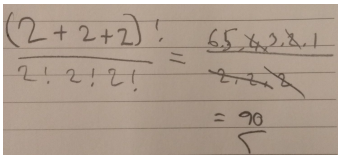
**4. naloga:** Look at the routine:

```
co write("1"); write("2");
|| write("3"); write("4");
|| write("5"); write("6");
oc
```

1. How many different prints can this program produce? Why!


If there are $n$ threads such that $Thread_i$ executes $m_i$ atomic actions, then the number of possible interleavings (options/solutions) of the atomic actions is:

$$\frac{(m_1+m_2+\cdots+m_n)!}{m_1!\cdot m_2!\cdots m_n!}$$




2. Use semaphores in such wey that the program always prints: 1,2,3,4,5,6.