SPEED UP ASSIGNMENT

1.

1.1

According to the Amdahl’s law:

S(o) = 1 / (1 – x) + (x / S(e))

S(o): Speed up overall

S(e): Speed up enhanced

x: Fraction enhanced

In the exercise 1, it is stated that each of the improvement will improve its associated part of computation by a factor of 2, which means S(e) = 2. In addition, the fraction enhanced value will be:

Accessing memory: x1 = 0,3

Multiplication: x2 = 0,2

Executing other instruction: x3 = 0,5

According to Amdahl’s law with the formula S(o) = 1 / (1 – x). (x / S(e)) , we can see that the larger x could be , the better S overall will become. Therefore, to improve the performance S overall to the largest, **improve x3 = 0,5 would be the best option**.

1.2

We have : S(o) = 1 / (1 – x) + (x / 2)

X1 = 0,3 🡺 S(o1) = 1,17

X2 = 0,2 🡺 S(o2) = 1,11

X3 = 0,5 🡺 S(o3) = 1,33

2.

According to the Amdahl’s law:

S(o) = 1 / (1 – x) + (x / S(e))

S(o) = 1,2

X = 0,4

* 1,2 = 1 / (1 – 0,4) + (0,4 / S(e)) 🡺 0,72 + (0,48/S(e)) = 1
* **Speed enhanced S(e) = 0,48 / 0,28 = 1,71**