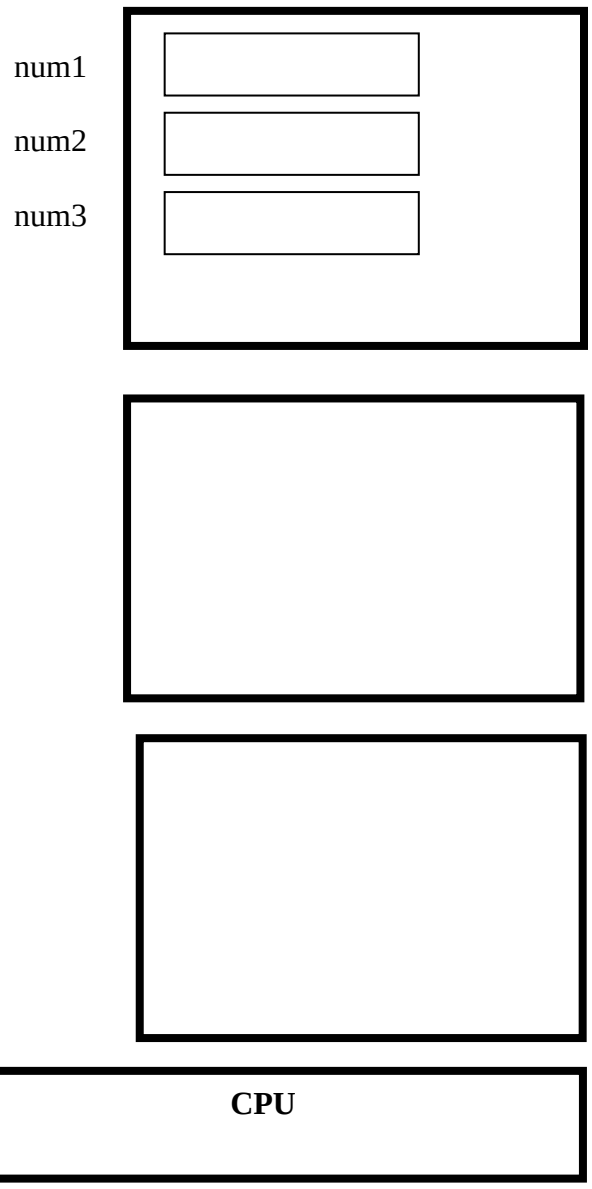
ITI1120 - Section 1 Exercise Solutions

Program Memory — **Exercise 1-1 - Algorithm for Average** — **Working memory**

GIVENS: num1, num2, num3 (three numbers)
RESULTS:
avg (the average of num1, num2, and num3)

HEADER: avg ← average(num1, num2, num3)

BODY:
avg ← (num1 + num2 + num3)/3



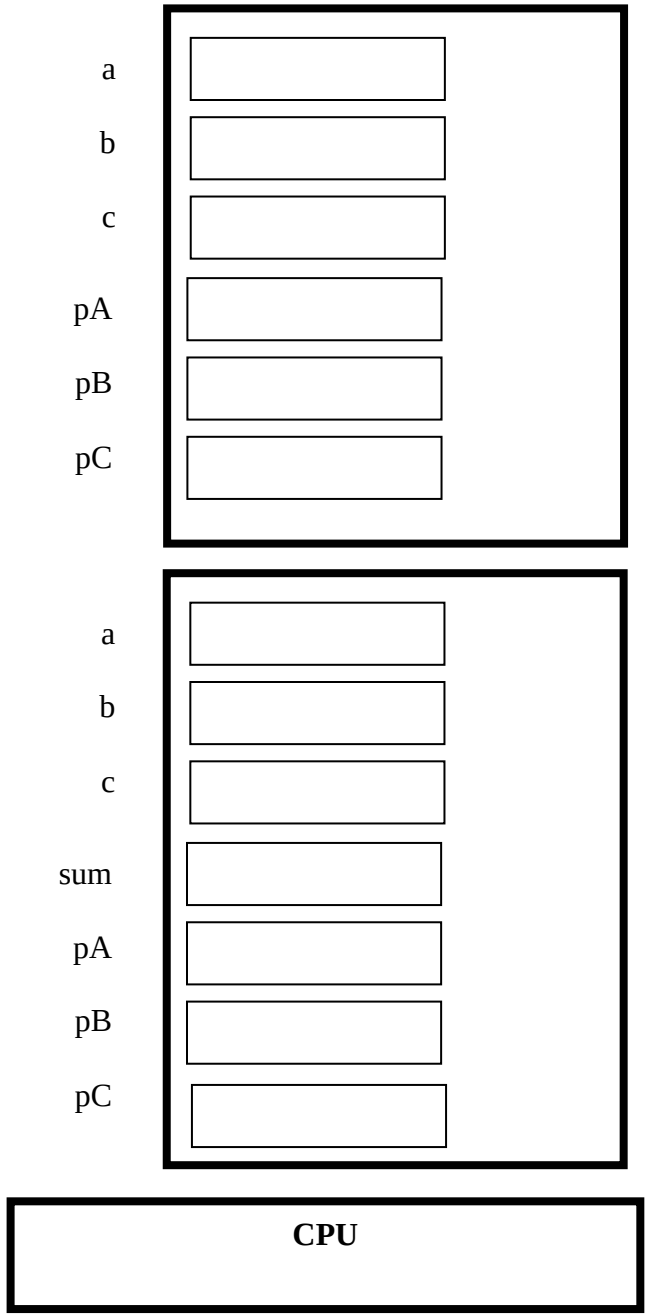
Program Memory **Exercise 1-2 - Another example** **Working memory**

GIVENS: a, b, c *(three numbers)*
RESULTS: pA, pB, pC *(three proportions)*
HEADER: (pA,pB,pC) ← computeP(a,b,c)
BODY:

1. pA ← a / (a+b+c)
2. pB ← b / (a+b+c)
3. pC ← c / (a+b+c)

GIVENS: a, b, c *(three numbers)*
INTERMEDIATES: sum *(their sum)*
RESULTS: pA, pB, pC *(three proportions)*
HEADER: (pA,pB,pC) ← computeP(a,b,c)
BODY:

1. sum ← a+b+c
2. pA ← a / sum
3. pB ← b / sum
4. pC ← c / sum



Program Memory **Exercise 1-3 Average out of 100** **Working memory**

Givens: s**core1, score2, score3 (scores out of 25)**

Results: a**vgPct (average of scores, out of 100)**

Intermediates:

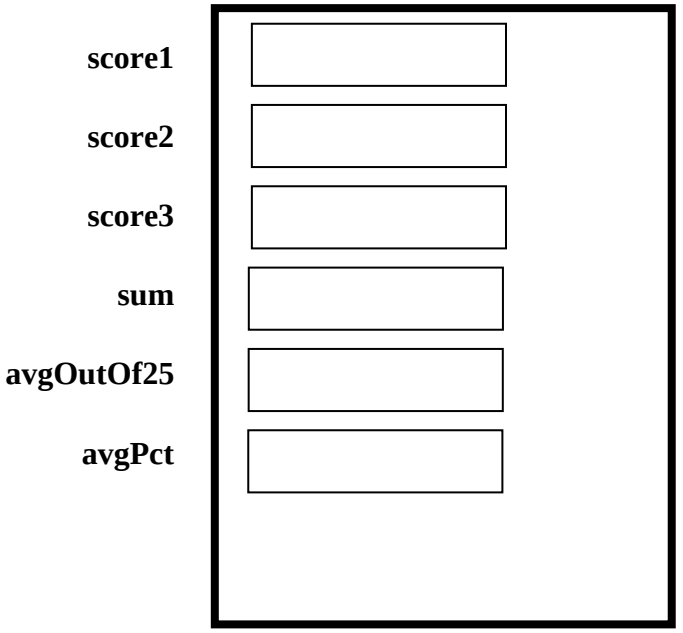
sum (sum of scores)

avgOutOf25 (average of scores, out of 25)

Header: a**vgPct ← markResult(score1, score2, score3)**

Body:

1. **sum ← score1 + score2 + score3**
2. **avgOutOf25 ← sum / 3**
3. **avgPct ← avgOutOf25 * 4**



CPU

Program Memory

Exercise 1-4 Last Example

Working memory

… Without a constant

…

Body

…

t1 ← c1 * 0.07 // GST

t2 ← c2 * 0.07 // GST

t3 ← c3 * 0.07 // PST

t4 ← c4 * 0.07 // GST

…

…with constants GST and PST

Body

GST ← 0.07

PST ← 0.07

…

t1 ← c1 * GST

t2 ← c2 * GST

t3 ← c3 * PST

t4 ← c4 * GST

…

CPU