

ITI1120 - Section 1 Exercise Solutions

Exercise 1-1 - Algorithm for Average

Program Memory

Working memory

GIVENS: Num1, Num2, Num3 (three numbers)

RESULTS:

Avg (the average of Num1, Num2, and Num3)

HEADER: Avg \leftarrow Average(Num1, Num2, Num3)

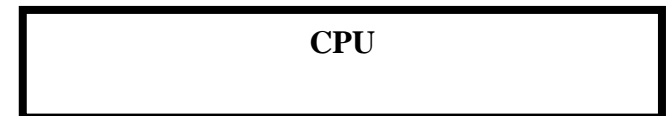
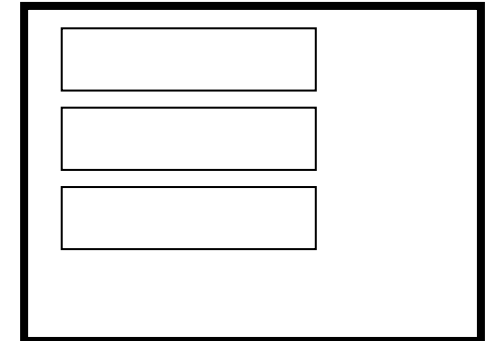
BODY:

Avg \leftarrow (Num1 + Num2 + Num3)/3

Num1

Num2

Num3



GIVENS: A, B, C (three numbers)
 RESULTS: PA, PB, PC (three proportions)
 HEADER: (PA,PB,PC) ← ComputeP(A,B,C)
 BODY:
 1. $PA \leftarrow A / (A+B+C)$
 2. $PB \leftarrow B / (A+B+C)$
 3. $PC \leftarrow C / (A+B+C)$

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. $Sum \leftarrow A+B+C$
 2. $PA \leftarrow A / Sum$
 3. $PB \leftarrow B / Sum$
 4. $PC \leftarrow C / Sum$

A

B

C

PA

PB

PC

A

B

C

Sum

PA

PB

PC

CPU

Givens: **Score1, Score2, Score3** (scores out of 25)

Results: **AvgPct** (average of scores, out of 100)

Intermediates:

Sum (sum of scores)

AvgOutOf25 (average of scores, out of 25)

Header: **AvgPct** ← **MarkResult(Score1, Score2, Score3)**

Body:

1. **Sum** ← **Score1 + Score2 + Score3**
2. **AvgOutOf25** ← **Sum / 3**
3. **AvgPct** ← **AvgOutOf25 * 4**

Score1

Scire2

Score3

Sum

AvgOutOf25

AvgPct

CPU

... 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

...

