ITI1120 Section 3 Exercise Solutions

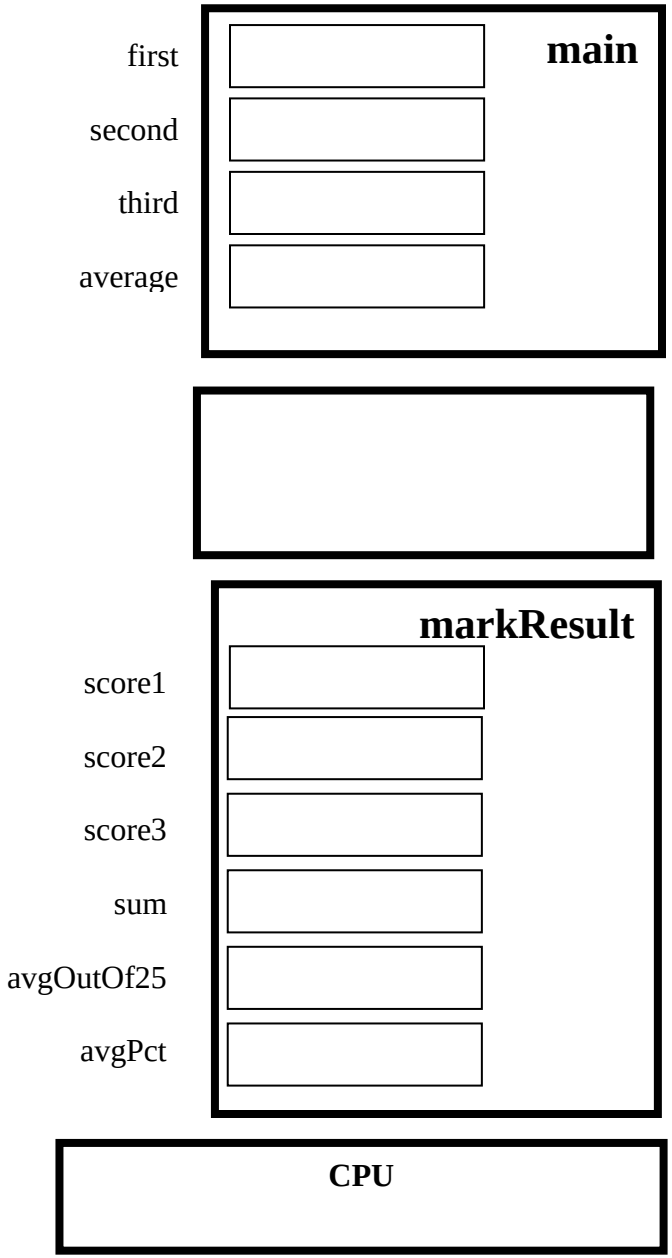
Program Memory | **Exercise 3-1 – Main Algorithm** | **Working memory**

Givens: none
Results: none
Intermediates:
first, second, third (three scores)
average (average of scores, out of 100)
Header: m**ain()**
Body:
(Read in scores from the user)

1. **printLine("Please enter three scores")**
2. **first ← readReal()**
3. **second ← readReal ()**
4. **third ← readReal ()**
   (Call the markUser algorithm)
5. **average ← markResult(first, second, third)**
   (Print the average for the user)
6. **printLine("The average is ", average)**

Givens: s**core1, score2, score3** (scores out of 25)
Results: a**vgPct** (average of scores, out of 100)
Intermediates: s**um** (sum of scores)
a**vgOutOf25**(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**



Program Memory

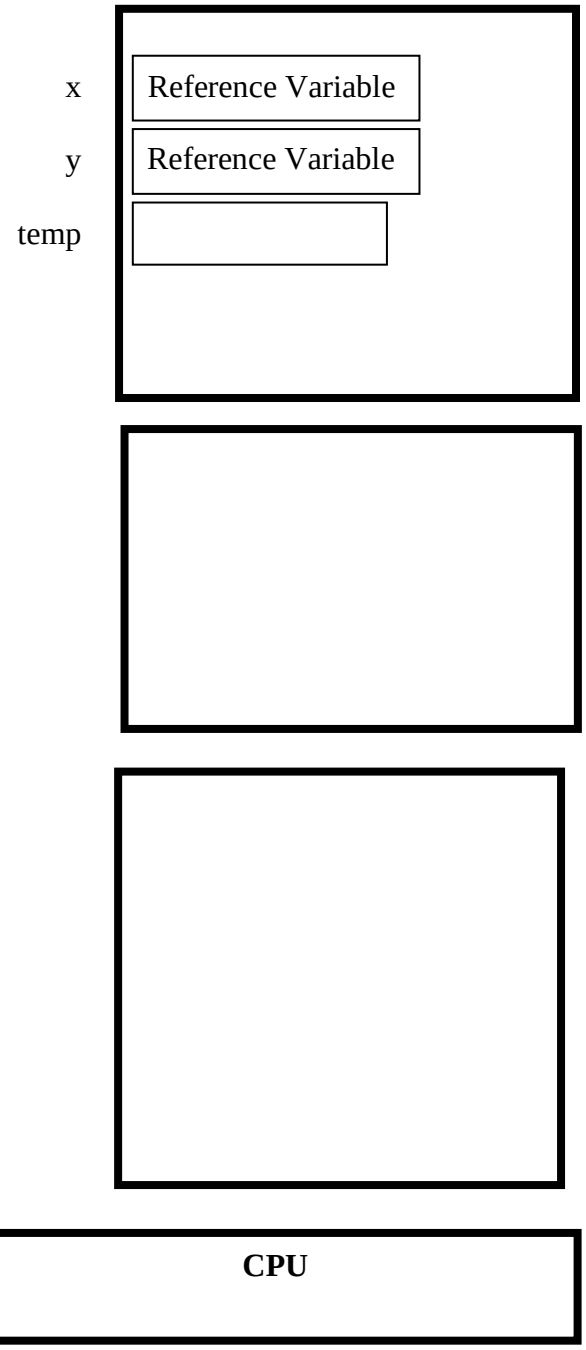
Exercise 3-2 – Swap 2 Values

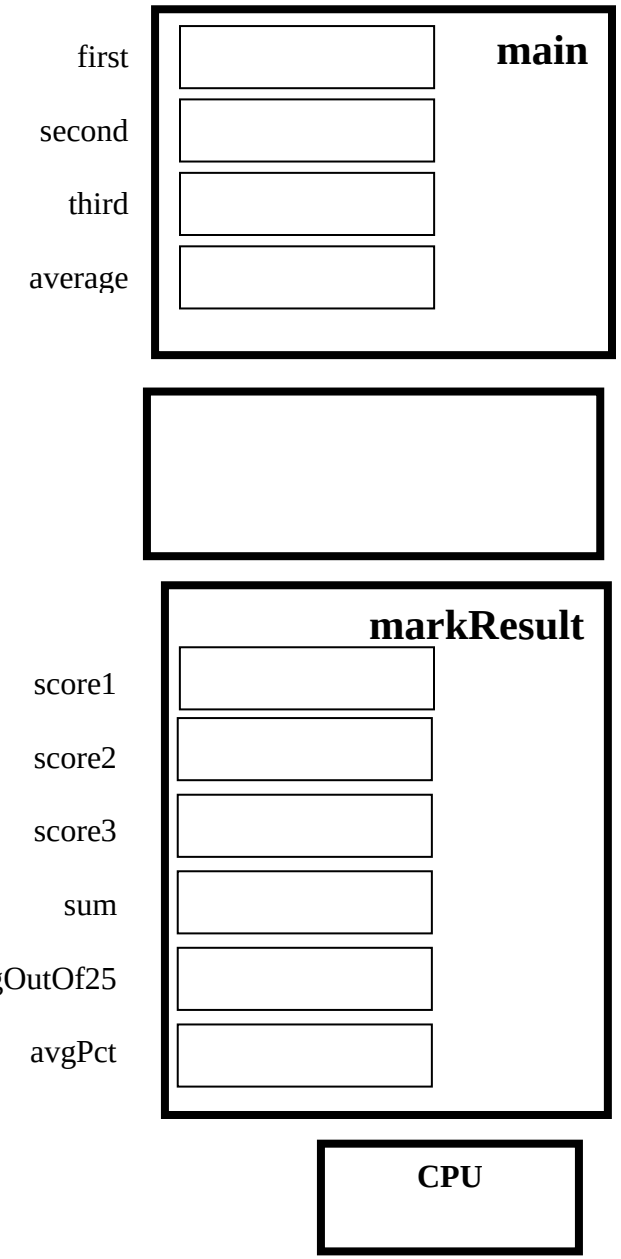
Working memory

GIVENS: **x, y (two numbers)**
RESULTS:
MODIFIEDS: **x, y (swapped)**
INTERMEDIATES:
temp (temporary storage for x)
HEADER: **swap(x, y)**

BODY:

temp ← x
x ← y
y ← temp



Program Memory **Exercise 3-3 – Translating to Java** **Working memory**

```
public static void main (String[] args)
{
   // SET UP KEYBOARD INPUT
   Scanner keyboard = new Scanner( System.in );
   // DECLARE VARIABLES/DATA DICTIONARY
   double first, second, third ; // three scores
   double average ;  // average of scores
   // READ IN Values from the user
   System.out.println ("Please enter 3 score values: ");
   first = keyboard.nextDouble( );
   second = keyboard.nextDouble( );
   third = keyboard.nextDouble( );
   // Call to markResults
   average = markResult(first, second, third);
   // PRINT OUT RESULTS
   System.out.println("The average is " + average);
}
public static double markResult(double score1,
                                double score2,
                                double score3 )
{
   // Intermediate variables
   double sum ;    // sum of score1, score2, score3
   double avgOutOf25; // Average out of 25
   // Result variable
   double avgPct ;    // average out of 100
   // BODY OF ALGORITHM
   sum = score1 + score2 + score3;
   avgOutOf25 = sum / 3.0;
   avgPct = avgOutOf25*4;
   // RETURN RESULTS
   return avgPct;
}
```