

Assignment 1

1. Mark the following statements as true or false.
 - a. The first device known to carry out calculations was the Pascaline. **False**
 - b. Modern-day computers can accept spoken-word instructions, but cannot imitate human reasoning. **False**
 - c. In Unicode, every character is coded as a sequence of sixteen bits. **True**
 - d. The arithmetic operations are performed inside the CPU and, if an error is found, it outputs the logical errors. **False**
 - e. A sequence of 0s and 1s is called a decimal code. **False**
 - f. A Java compiler is a program that translates a Java program into bytecode. **True**
 - g. Bytecode is the machine language of the JVM. **True**
 - h. The CPU stands for command performing unit. **False**
 - i. RAM stands for readily available memory. **False**
 - j. A program written in a high-level programming language is called a source program. **True**
 - k. ZB stands for zero byte. **False**
 - l. The first step in the problem-solving process is to analyze the problem. **True**

13. Design an algorithm to find the weighted average of four test scores. The four test scores and their respective weights are given in the following format: testScore1 weightTestScore1

To get the weighted average of four test scores, first you need to know each test score and its weight. Next, you multiply each test score by its weight and then add these numbers to get the average. Therefore:

1. Get testScore1, weightTestScore1
2. Get testScore2, weightTestScore2
3. Get testScore3, weightTestScore3
4. Get testScore4, weightTestScore4
5. $sum = testScore1 * weightTestScore1 + testScore2 * weightTestScore2 + testScore3 * weightTestScore3 + testScore4 * weightTestScore4;$

15. To make a profit, the prices of the items sold in a furniture store are marked up by 80%. After marking up the prices each item is put on sale at a discount of 10%. Design an algorithm to find the selling price of an item sold at the furniture store. What information do you need to find the selling price?

To calculate the selling price of an item, we need to know the original (the price the store pays to buy it) of the item. We can then use the following formula to find the selling price:

$sellingPrice = (originalPrice + originalPrice * 0.80) * 0.90$

- a. Get originalPrice
- b. Calculate the sellingPrice using the formula: $sellingPrice = (originalPrice + originalPrice * 0.80) * 0.90$

The information needed to calculate the selling price is the original price and the marked-up percentage.

17. Suppose that the cost of sending an international fax is calculated as follows: Service charges \$3.00, \$0.20 per page for the first 10 pages, and \$0.10 for each additional page. Design an algorithm that asks the user to enter the number of pages to be faxed. The algorithm then uses the number of pages to be faxed to calculate the amount due.

Suppose that numOfPages denotes the number of pages to be faxed and billingAmount denotes the total charges for the pages faxed. To calculate the total charges, you need to know the number of pages faxed.

If numOfPages is less than or equal to 10, the billing amount is service charges plus (numOfPages*0.20); otherwise, billing amount is service charges plus 10*0.20 plus(numOfPages-10)*0.10. You can now write the algorithm as follows:

- a. Get numOfPages.
- b. Calculate billing amount using the formula: if (numOfPages is less than or equal to 10)
billingAmount = 3.00 + (numOfPages * 0.20);
otherwise billingAmount=3.00 +10*0.20 +(numOfpages – 10)*0.10;