

Palomar College  
Computer Science &  
Information Technology  
CSCI 112 Programming Fundamentals I  
Chapter 0, 1 – HW 1

1. Why are you taking this class?

*I want to be a computer science major/work in that field.*

2. If a computer executes instructions to sum the contents of memory cells 2 and 999 and store the result in cell 0, what would be the contents of cells 0, 2, and 999?

| Address | Contents | Name<br>(given by programmer) | Type |
|---------|----------|-------------------------------|------|
| 0       | -27      | num1                          | int  |
| 1       | 354      | miles                         | int  |
| 2       | 35       | count                         | int  |
| 3       | 20       | distance                      | int  |
| 4       | 3        | small                         | int  |
| ....    | ....     |                               | int  |
| 999     | 95       | large                         | int  |

*0: 95 + 35 = 130*

*2: 35*

*999: 95*

What are the names of the memory locations 0, 2, 999?

*num1, count, large*

~~*respectively*~~

3. What do you think these five high-level language statements mean and what are the values of x, y, z and kelvin?

| Address | Contents | Name<br>(given by programmer) | Type   |
|---------|----------|-------------------------------|--------|
| 0       | 3        | a                             | int    |
| 1       | 5        | b                             | int    |
| 2       | 6        | c                             | int    |
| 3       | 0        | x                             | int    |
| 4       | 0        | y                             | int    |
| ....    |          |                               | int    |
| 999     | 0        | z                             | int    |
| 1020    | 0.0      | kelvin                        | double |
| 1040    | 20.00    | celsius                       | double |

$x = a + b + c;$      $y = x/z;$      $z = z + 1;$      $kelvin = celsius + 273.15;$

$x = 14$      $y = \text{und.}$      $z = 1$      $kelvin = 293.15$

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4. One bit can have two values, 0 or 1. A combination of 2 bits can have four values: 00, 01, 10, and 11. List all the values for four bits. Calculate how many possible values for the following number of bits: 4, 8, and 16 bits.

00000000

5. Enter the First Program located in the slides; please refer to Software Download hints and best practices. Turn in program as directed by Lab/Team Projects Turn in procedures. This is lab1.
6. List two reasons why it would be preferable to write a program in C rather than in the machine language.  
Typing code in 1's and 0's would be difficult.  
It would take too long.
7. Would a syntax error be found in a source program or an object program? What system program would find a syntax error if one existed?  
Both and the word processor would find a syntax error.
8. Explain the differences among the source program, the object program, and the executable program. Which do you create, and which does the compiler create? Which does the linker create?

| creator         |            |
|-----------------|------------|
| I create        | source     |
| compiler create | object     |
| linker create   | executable |

source program is the specific code language,  
 object program is the source program that  
 has been compiled. The executable is  
 us telling the computer to execute the  
 program.

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9. Write the pseudocode and then the Converting Miles to Kilometers program.

Input Miles \_\_\_\_\_

Input Kilometers \_\_\_\_\_

Miles TO kilometers ( )

Miles TO kilometer (miles, kilometer);

Print "X miles = X kilometers"

Save output of formula ~~as~~ as X

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10. Write the pseudocode for the following problem:

Write a program that calculates mileage reimbursements for a salesperson at a rate of \$.35 per mile. Your program should interact with the user in the manner:

MILAGE REIMBURSEMENT CALCULATOR

Enter beginning odometer reading====> 13505.2

Enter ending odometer reading ====> 13810.6

You traveled 305.4 miles. At \$.35 per mile, your reimbursement is \$106.89

Inputs:

Please input Starting odometer reading \_\_\_\_\_  
Save starting odometer readings as StartODO.  
Please input ending odometer readings \_\_\_\_\_  
Save ending odometer readings as EndODO.

Calculations:

$\text{End ODO} - \text{Start ODO} = \text{Total Miles Traveled}$   
 $\text{Total Miles Traveled} * 0.35 = \text{reimbursement}$

Results:

Print "you traveled \_\_\_\_\_ miles"  
Print "your reimbursement is \_\_\_\_\_ \$"

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11. Write the pseudocode and plans for the following problem:

A program that estimates the temperature in a freezer (in °C) given the elapsed time (hours) since a power failure. Assume this temperature (t) is given by:

$$T = \frac{4t^2 - 20}{t + 2}$$

Variables:

Beginning temperature : t

Hours ~~since~~ since power outage:

Calculations:

$$\frac{[(4/\text{temperature})^2] - 20}{\text{temp.} + 2} = T$$

T = temperature after x amount of hrs.

Results:

Print "Beginning temp: \_\_\_\_"

Print "Time elapsed: \_\_\_\_"

Print "Current temp.: T"

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12. Write the pseudocode and plans to convert a temperature in degrees Fahrenheit to the kelvin scale.

Data Requirement

Problem input: Fahrenheit

Problem output: kelvin

Formula:  $\text{kelvin} = 5/9 (\text{Fahrenheit} - 32) + 273.15$

Variables:

F-degrees: \_\_\_\_\_

~~K-degrees: \_\_\_\_\_~~

Calculations:

$$K = \frac{5}{9} (F\text{-degrees} - 32) + 273.15$$

K = \_\_\_\_\_

Results:

Print: "Temp. in Fahrenheit: \_\_\_\_\_"

Print: "Temp. in Kelvin: \_\_\_\_\_"