Representation and Modelling CS4012
Lab 2

(Note: These questions are taken from the questions/problems at the end of chapter 2 of the textbook, "Problem Solving and Programming Concepts")

Q1 Name the data type (in the context of the module) for each of the following constants. Explain your answer.

a. 5.38
b. "87654"
c. *True*
d. "A"
e. "707-434-5555"
f. "New York"
g. -389
h. 2.45E6
i. 48976.0
j. *False*

Q2. Find the result of the following operations:

a. 5 + 4
b. 10/2
c. *True* OR *False*
d. 20 MOD 3
e. 5 < 8
f. 25 MOD 70
g. "A" > "H"
h. NOT *True*
i. 25\70
j. *False* AND *True*
k. 20 * 0.5
l. 35 <= 35
m. 35/7
n. *False* OR *False*
o. *True* AND *True*
p. 50 MOD 5
q. -35 < 67
r. 4.0 ^ 3
s. 60\9
t. 35 < 35
u. *True* AND *False*

Q3 Using the hierarchy chart (Table 2.8 in book), list the order in which the following operations would be processed. (Remember: Operations are processed left to right within a level in the hierarchy table.)

a. +, -, *
b. /, \, =
c. OR, *, <
d. NOT, AND, *
e. NOT, >, +
f. AND, OR, NOT
g. <, AND, >, +

h. *, ^, +
i. NOT, +, \
j. MOD, \, <

Q4 Evaluate the following equations, given the values $A = 12$, $B = 3$, $C = 6$, $D = 2$:

a. $F = A + B/C - D^2$
b. $F = (A + B)/ C - D^2$
c. $F = A + B/(C - D^2)$
d. $F = (A + B)$ MOD C
e. $F=(A+B)\backslash D^2$

Q5 An employee came in to work and clocked in at *MorningIn,* clocked out at *NoonOut* for lunch, clocked back in at *NoonIn,* and clocked out to go home at *NightOut* (all in minutes since midnight). Set up equations to calculate the number of hours and the number of minutes the employee worked for the day. (You will develop two equations.)

Q6 A part-time employee worked 20 hours in the first week and 15 hours in the second week of a two-week pay period. He is paid a weekly salary based on a 40-hour week. What is his full-time equivalent for the two weeks based on a 40-hour week (i.e., what percentage of full time did he work)? Write a general equation that could be used to express and store the full-time equivalent of any hours worked per week.

FullTime=

Q7 Evaluate the following equations, given *A* = *False*, *B* = *True*, *C* = *False*, *D* = *True*. (Include the structure of the order of processing—see page 32 for example.)
a. *R* = *A* AND *B* OR *C* AND *D*
b. *R* = NOT (*A* AND *B*) OR NOT (*D* AND *C*)
c. *R* = (*A* OR *B*) AND (*D* OR *C*)
d. *R* = NOT (*A* AND *B* OR *C*) AND (*A* OR *B* AND *D*)
e. *R* = *C* OR NOT (*A* AND *D*) AND (*A* OR *B*) OR NOT (*A* OR *C*)