Computer Science Division
Department of Mathematics
Faculty of Science

Level 1- Spring Semester
Course: COMP 102
Date: March 5, 2022

Sheet 2

Objective: upon successful completion of this sheet, students should be able to

1. convert from any number system to another.
2. use 1's complement and 2's complement for performing subtraction and for representing signed numbers.

Q1) Convert the following binary numbers into decimal numbers: 1011001, 1100111.001, and 10110010.10101.

Q2) Convert the following decimal numbers to binary: 255, 452, 124.5, and 587.625.

Q3) Convert the following numbers from the given base to the other three bases listed in the table:

Decimal	Binary	Octal	Hexadecimal
369.3125	?	?	?
?	10111101.101	?	?
?	?	326.5	?
?	?	?	F3C7.A

Q4) In each of the following cases, determine the radix r:

(a) $(BEE)_r = (2699)_{10}$
(b) $(365)_r = (194)_{10}$

Q5) Obtain the 1's and 2's complements of the following unsigned binary numbers: 10011100, 10011101, 10101000, 00000000, and 10000000.

Q6) Perform the following operation with the following unsigned binary numbers by taking the 2's complement of the subtrahend.

(a) 11010-10001
(b) 11110-10001
(c) 1111110-1111110
(d) 101001-101

Q7) Perform the arithmetic operations (+36) + (-24) and (-35) - (-24) in binary using signed 2's complement representation for negative numbers.