Instructions:
Submission date: Dec 8th 11.00 pm.
Save the programs into a folder **firstname_lastname** and zip the folder.
Email the assignment to ashakiran.byrappa@wmich.edu with subject **CS2100: ExtraCreditHW**

1) Write a program that computes the value of ex by using the formula. The program should ask the user to input the value of x and the value of n.

$$e^X = 1 + \frac{x}{1!} + \frac{x^2}{2!} + \frac{x^3}{3!} + \frac{x^4}{4!} + \dots + \frac{x^n}{n!}$$

2) The Towers of Hanoi is a famous puzzle. Figure 1 shows an example of a Hanoi Towers. Legend has it that, in a temple in the Far East, priests are attempting to move a stack of disks from one peg to another. The initial stack had 64 disks threaded onto one peg and arranged from bottom to top by decreasing size. The priests are attempting to move the stack from this peg to a second peg, under the constraints that exactly one disk is moved at a time and that at no time may a larger disk be placed above a smaller disk. A third peg is available for holding disks temporarily.
A recursive algorithm to resolve the problem that you may use is:
function Hanoi(n: integer; from, dest, by: character);
      if (n=1) then
           display('Move the plate from ', from, ' to ', dest)
      else begin
           Hanoi(n-1, from, by, dest);
           Hanoi(1, from, dest, by);
   Hanoi(n-1, by, dest, from);
      end;
End;

Below is an example of the set of moves that are required to move 3 (n=3) disks from one peg to another one.
from -> dest
from -> temp
dest -> temp
from -> dest
temp -> from
temp -> dest
from -> dest
Write a program and a recursive function that uses the pseudo-code above to perform the following:
a) Ask the user to input the number of disks (input must be integer n).

b) Call your recursive function to move the disks from current peg (peg from) to peg destination (peg dest) and using temporarily peg (peg by).

c) Your program should display the number of operations to perform the move of all disks from peg from to peg dest.
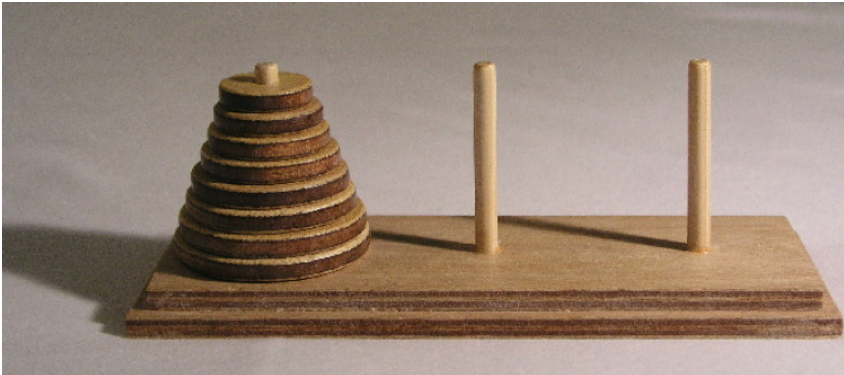
3) A text file contains the following information. The first field is the student WIN number, second field is firstname of the student, third field is lastname of student and all other fields are the courses taken by the student. The fields are seperated by semicolon ":".

Win123:John:Smith:CS1120:CS2200:CS2300:CS4550
Win456:Bob:Wright:CS2200:CS2300
Win789:Don:Thomas:CS1120:CS3300:CS4450
Win148:Mark:Davis:CS2300:CS3300

Create a database called University. Read the above data from the textfile and store it in three database tables called Student, Courses, Enrolled.

Student(Win_number, First_name, Last_name)
Courses(Course_number, Course_description)
Enrolled(Win_number, Course_number)

Provide the following operations on database.

a) Display list of all student Win_numbers for the user to select a student

b) For each student selected, display first_name, last_name and course_descriptions of courses selected by the student.