CS1133, Spr 2018, HW 11 (Lect 24, Pts=100)

Due May 1, 2018 (before 11:00 pm)

Problem 1 [100 pts]

There are a lot of thing we want to keep track of about any one of our friends. Here for simplicity, we only want information about the name, the date of birth, and the email address. We want to use a structure variable to store the information. The structure variable must have the following three fields: (1) a field named `'Name'` for a string with the name, (2) a field named `'Dob'` for the date-of-birth represented by a type obtained using the function `datenum`, and (3) a field named `'EmailAddress'` for the email address of the friend.

The data for the email address must be stored in a structure type. That structure must have two fields: (1) a field named `'loginName'` for a string with the login name, and (2) a field named `'domainName'` for a string with the domain name of the email address.

Write a constructor, named `MyFriendC`, of a structure for information about a friend, as described above. This constructor needs another constructor, named `emailAdressC`, of a structure for an email address.

Write these constructors so that the attached script program, `Friends`, can be used to produce an array of structures containing the information of a number of friends. This array, whose name is `MyFriends`, is saved in the file named `MyFriends.mat`, by the last statement of the program in the directory specified by the first argument of the function `save`. The argument must be a string specifying the directory. You need to replace it with the appropriate directory on your computer. You may want to use the same directory as your functions and scripts for this assignment so Matlab knows where to find the file.

Write a script to load the array of structures and produce an array of login names of your friends who are from NYU, and are of legal drinking age (at least 21 years old). The names must be stored in the matrix one name per row. If that matrix is called `NYUnameList` and has been initialized as an empty matrix, and if `newLoginName` is the login name of another one of your NYU friend who is of legal drinking age, then that friend's login name can be appended to `NYUnameList` using this statement: `NYUnameList = strvcat(NYUnameList,newLoginName)`. The function `strvcat` concatenates matrices vertically to form a valid character matrix by padding on the right of each row with blanks if necessary.

You can assume that your NYU friends all use the NYU email address with the domain name `'nyu.edu'` (all in lowercases). Note that the date of birth is represented in the `datenum` form (given by the number of days from January 0, 0000). Today's date in

`datenum` form can be assigned to a variable, say `todayDate`, using the function `now` like this: `todayDate = now`.

This is what you need to do to calculate your friend's age. If `dobFriend` is the date of birth of a friend in `datenum` form, then you can compute the age of your friend as `(todayDate  dobFriend)/365.24` years.

This is one sample output result:

```
This is the list of my NYU friends who are of legal drinking age:
Eve
Gabriel
Ian
Zach
```