BIRZEIT UNIVERSITY

Computer Organization and Assembly Language – ENCS336

8086 Assembly Project

Submission Due: Monday 13/1/2025 11:55PM on ITC

Important Notes:

- You can work individually or in groups of two students (only two!) across the two sections.
- Each group should do one submission: assembly source file (code) + screenshots images of the program outputs.

Project description:

In a company, a security lock is used to access some rooms. This lock accepts two inputs: the employee identification number (16-bit integer number) and his/her password (8-bit integer number). The company has 10 employees with the following ID's and passwords shown in the table below (in decimal).

Before we store this information in the memory, we need to encrypt the passwords and store the encrypted passwords in the memory and not the actual password numbers. The encryption is to swap the least significant bit (lsb) with the most significant bit (msb) of the password number. If the two bits are the same, then we rotate right the password number by 2 bits.

Store the employees ID numbers and the encrypted passwords in the memory, according to the above encryption method. Then write an 8086 assembly program to access these rooms. The inputs of the program are the employee identification number and the password number. The output is to display a message on the screen saying the access is allowed or the access is denied.

Since the employee will enter his/her un-encrypted password, it shouldn't be displayed on the screen when he/she enters it. Therefore, you have to use DOS function 8, which reads single character into AL from the keyboard but without displaying it on the screen.

Employee ID (16-bit number)	Password (8-bit number)
65	125
148	84
526	29
2036	37
1504	187
82	219
112	62
2840	75
940	141
1292	243