AI LAB ASSIGNMENT 1

Due Date: 30/09/2025   **Instructor: SHOAIB FAOOQ**
Maximum Points: 180
Section: BSCS 5 E,M / BSIT 5

Note: Plagiarism will result in zero marks for all assignments. Submissions will not be accepted via email, WhatsApp, or any group platform under any circumstances. Only submissions through Google Classroom will be considered.

The file name must follow this format: 2020_AG_xxx_Assignment1.ipynb.

Q1: Print following pattern with using String multiplication.

```
* * * * *
* * * *
* * *
* *
*
*
* *
* * *
* * * *
* * * * *
```

Q2: Take input your name, AG number, age, home town name, University name and your degree as user input and print text in following way:

For Example: My name is Ali. I am 23 years old and currently studying BS Computer Science (BSCS) at UAF University. My ARID number is 2020-AG-XXXX. My hometown is Burewala.

- ⇨ Using String Concatenation and type conversion for generation above text.
- ⇨ Find length of string of above text after generation text.
- ⇨ Print above text in lower cause
- ⇨ Print above text in Upper cause.
- ⇨ Print in revers order without any Loop or condition. (You may be use slicing).

⇨ **Print above string in ascending order with step size 2:**
Like (sriptadpittx nfloigwyFrEape ynm sAi m2 er l n urnl tdigB optrSine(SS tAi nvriy yAI ubri 00AI-XX yhmtw sBrwl.)

⇨ **Print above string in revers order if step size is 3 like: (leBiwehMXXI-0srm Ry.iendAaSBeeSepCBndsleud ory2a lsenMemEoy ilfix i auie)**

Q3: Solve following expiration using python code and print possible out puts. Values

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

of a, b. and c will be entered by user.

Q4: Let Alpha = "ABCDEFGHIJKLMNOPQRSTUVWXYZ" Than print following patterns by using slicing

⇨ **Print reverse order**
⇨ **"ZXVTRPNLJHFDB"**
⇨ **"ADGJMPSVY"**
⇨ **"ZWTQNKHEB"**
⇨ **Replace first and last letters with "* * *"**

Q5: Solve following expiration using python code and print possible out puts. Values of m and c will be entered by user.

$$E = mc^2$$

Q6: Write a program that produces the following output. With using String multiplication.

```
! ! ! ! ! ! ! ! ! ! ! ! ! ! ! ! ! ! ! ! !
\ \ ! ! ! ! ! ! ! ! ! ! ! ! ! ! ! ! ! ! / /
\ \ \ \ ! ! ! ! ! ! ! ! ! ! ! ! ! ! ! / / / /
\ \ \ \ \ \ ! ! ! ! ! ! ! ! ! ! ! ! ! / / / / / /
\ \ \ \ \ \ \ \ ! ! ! ! ! ! ! ! ! / / / / / / / /
\ \ \ \ \ \ \ \ \ \ ! ! / / / / / / / / / /
```

Q7. It's common to print a rotating, increasing list of single-digit numbers at the start of a program's output as a visual guide to number the columns of the output to follow. Write code without use any control structure. Singel of multiple print statements will be valid.

```
         |               |               |               |               |               |
12345678901234567890123456789012345678901234567890123456789012345678 90
```

Q8: Write code without use any control structure. Singel of multiple print statements will be valid.

```
* * * * * *   / / / / / / / / / / / /   * * * * * *
* * * * *     / / / / / / / / / / / \ \   * * * * *
* * * *       / / / / / / / / \ \ \ \     * * * *
* * *         / / / / / / \ \ \ \ \ \     * * *
* *           / / / / \ \ \ \ \ \ \ \     * *
*             / / \ \ \ \ \ \ \ \ \ \ \   *
              \ \ \ \ \ \ \ \ \ \ \ \ \
```