**SET A**

**Q1. Message Encryption:**

You were hired by the secret government to make an encryption device that can encrypt your message in such a way that It will be almost impossible for the enemy to decrypt. The Rule of Encryption: you will take one message input as a string and encrypt it in such way that :

1. 21When you find an **Uppercase Letter >>> offset it by 3 letter to the right** (example: it the current letter is “**A**” then it should be now “**D**”, KEEP IN MIND THAT IF THE LETTER EXCEEDS THE LIMIT YOU HAVE TO MAKE IT A CIRCULAR PATTERN SO THAT IT NEVER GOES BEYOND THE BOUNDARY; i.e. if the letters are “**X**”, ”**Y**”, ”**Z**”: then the output should be “**A**”,”**B**”,”**C**” respectively)
2. When you find a **Lowercase Letter >>> offset it by 4 letter to the left** (example: it the current letter is “**e**” then it should be now “**a**”, KEEP IN MIND THAT IF THE LETTER EXCEEDS THE LIMIT YOU HAVE TO MAKE IT A CIRCULAR PATTERN SO THAT IT NEVER GOES BEYOND THE BOUNDARY; i.e. if the letters are “**a**”, ”**b**”, ”**c**”, ”**d**”: then the output should be “**w**”, ”**x**”, ”**y**”, ”**z**” respectively).
3. If you find any digits it will be converted to the symbol **“ # ” .**
4. Other characters will turn into **“ \_ ”** symbol.

| **Sample Input** | **Output** |
| --- | --- |
| **“AaBbCcDdEeXxYyZz”** | **DwExFyGzAtBuCv** |
| **“Hello2441139@Bela!!”** | **Kahhk#######\_Eahw\_\_** |
| **“ ABxz 1 2”** | **\_\_DEtv\_\_#\_#** |

**Q2. Tracing**

| 1 | **test=""** | **OUTPUT** |
| --- | --- | --- |
| 2 | **i= 10** |  |
| 3 | **j= 77** |  |
| 4 | **while i<=50:** |  |
| 5 | **flag =True** |  |
| 6 | **test=str(i)** |  |
| 7 | **j-=2** |  |
| 8 | **run=j** |  |
| 9 | **while flag:** |  |
| 10 | **if run > i:** |  |
| 11 | **test1 = " --> "+str(run)** |  |
| 12 | **test+=test1** |  |
| 13 | **print(test1,end="")** |  |
| 14 | **run-=20** |  |
| 15 | **else:** |  |
| 16 | **flag=False** |  |
| 17 | **print("!!!")** |  |
| 18 | **print(test)** |  |
| 19 | **i+=15** |  |

**SET B**

**Q1. Message decryption:**

You were hired by the secret government to make a decryption device that can decrypt your message in such a way that It will be readable to the user as the way it was intended to. The Rule of decryption: you will take one message input as a string and decrypt it in such way that :

1. When you find an **Uppercase Letter >>> offset it by 3 letter to the left** (example: it the current letter is “**D**” then it should be now “**A**”, KEEP IN MIND THAT IF THE LETTER EXCEEDS THE LIMIT YOU HAVE TO MAKE IT A CIRCULAR PATTERN SO THAT IT NEVER GOES BEYOND THE BOUNDARY; i.e. if the letters are “**A**”,”**B**”,”**C**” : then the output should be “**X**”, ”**Y**”, ”**Z**” respectively)
2. When you find a **Lowercase Letter >>> offset it by 4 letter to the right**(example: it the current letter is “**a**” then it should be now “**e**”, KEEP IN MIND THAT IF THE LETTER EXCEEDS THE LIMIT YOU HAVE TO MAKE IT A CIRCULAR PATTERN SO THAT IT NEVER GOES BEYOND THE BOUNDARY; i.e. if the letters are : “**w**”, ”**x**”, ”**y**”, ”**z**”: then the output should be “**a**”, ”**b**”, ”**c**”, ”**d**” respectively).
3. If you find any **“ # ” character, replace it with a number which will also work as the counter of these special characters;** for example**:** if you find “**#**” for the first time then replace it with “**1**”, if its the 2nd time then replace with “**2**”, and goes on. .

| **Sample Input** | **Output** |
| --- | --- |
| **“DwExFyGzAtBuCv”** | **AaBbCcDdEeXxYyZz** |
| **“Kahhk#######\_Eahw\_\_”** | **Hello1234567Bela** |
| **“##DEtv\_\_#\_#”** | **12ABxz\_\_3\_4** |

**Q2. Tracing**

| 1 | **test=""** | **OUTPUT** |
| --- | --- | --- |
| 2 | **i= 15** |  |
| 3 | **j= 82** |  |
| 4 | **while i<=55:** |  |
| 5 | **flag =True** |  |
| 6 | **test=str(i)** |  |
| 7 | **j-=2** |  |
| 8 | **run=j** |  |
| 9 | **while flag:** |  |
| 10 | **if run > i:** |  |
| 11 | **test1 = " --> "+str(run)** |  |
| 12 | **test+=test1** |  |
| 13 | **print(test1,end="")** |  |
| 14 | **run-=20** |  |
| 15 | **else:** |  |
| 16 | **flag=False** |  |
| 17 | **print("!!!")** |  |
| 18 | **print(test)** |  |
| 19 | **i+=15** |  |