

4. Write the python program for Crypt-Arithmetic problem.

Program:

```
def isSolvable(words, result):
```

```
    mp = [-1]*(26)
```

```
    used = [0]*(10)
```

```
    Hash = [0]*(26)
```

```
    CharAtfront = [0]*(26)
```

```
    uniq = ""
```

```
    for word in range(len(words)):
```

```
        for i in range(len(words[word])):
```

```
            ch = words[word][i]
```

```
            Hash[ord(ch) - ord('A')] += pow(10, len(words[word]) - i - 1)
```

```
            if mp[ord(ch) - ord('A')] == -1:
```

```
                mp[ord(ch) - ord('A')] = 0
```

```
                uniq += str(ch)
```

```
            if i == 0 and len(words[word]) > 1:
```

```
                CharAtfront[ord(ch) - ord('A')] = 1
```

```
    for i in range(len(result)):
```

```
        ch = result[i]
```

```
        Hash[ord(ch) - ord('A')] -= pow(10, len(result) - i - 1)
```

```
        if mp[ord(ch) - ord('A')] == -1:
```

```
            mp[ord(ch) - ord('A')] = 0
```

```
            uniq += str(ch)
```

```
        if i == 0 and len(result) > 1:
```

```
            CharAtfront[ord(ch) - ord('A')] = 1
```

```
    mp = [-1]*(26)
```

```

    return True

def solve(words, i, S, mp, used, Hash, CharAtfront):

    if i == len(words):

        return S == 0

    ch = words[i]

    val = mp[ord(words[i]) - ord('A')]

    if val != -1:

        return solve(words, i + 1, S + val * Hash[ord(ch) - ord('A')], mp, used, Hash,
CharAtfront)

    x = False

    for l in range(10):

        if CharAtfront[ord(ch) - ord('A')] == 1 and l == 0:
            continue

        if used[l] == 1:
            continue

        mp[ord(ch) - ord('A')] = l

        used[l] = 1

        x |= solve(words, i + 1, S + l * Hash[ord(ch) - ord('A')], mp, used, Hash,
CharAtfront)

        mp[ord(ch) - ord('A')] = -1

        used[l] = 0

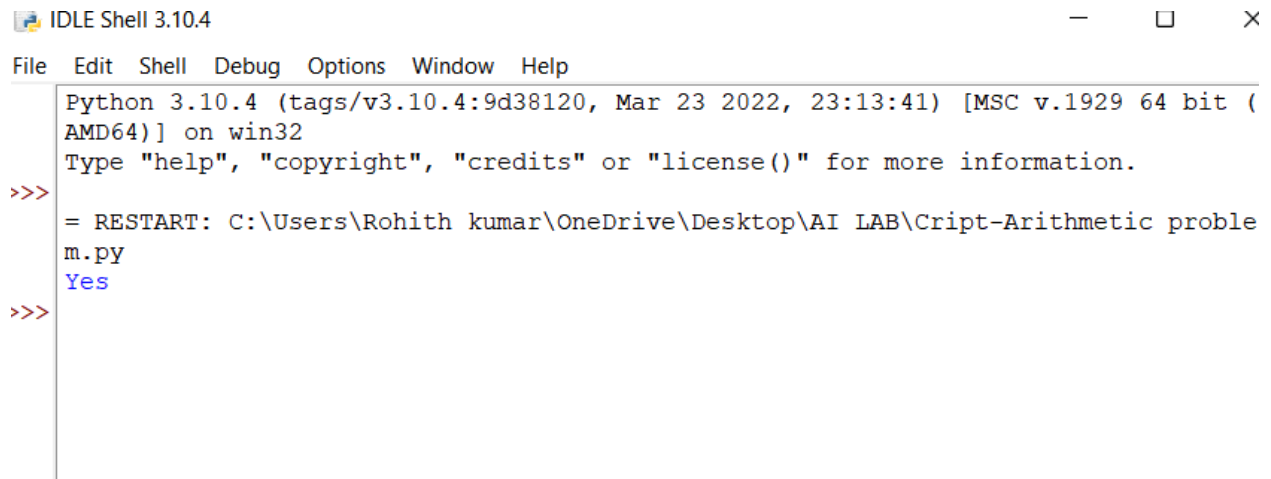
    return x

arr = [ "SIX", "SEVEN", "SEVEN" ]
S = "TWENTY"

```

```
if isSolvable(arr, S):  
    print("Yes")  
else:  
    print("No")
```

OUTPUT:



The screenshot shows the IDLE Shell 3.10.4 window. The title bar reads "IDLE Shell 3.10.4". The menu bar includes "File", "Edit", "Shell", "Debug", "Options", "Window", and "Help". The shell area displays the following text: "Python 3.10.4 (tags/v3.10.4:9d38120, Mar 23 2022, 23:13:41) [MSC v.1929 64 bit (AMD64)] on win32", "Type 'help', 'copyright', 'credits' or 'license()' for more information.", and a prompt ">>>". The user has entered "= RESTART: C:\Users\Rohith kumar\OneDrive\Desktop\AI LAB\Cript-Arithmetic problem.py" and the shell has responded with "Yes" in blue text. A second prompt ">>>" is visible at the bottom.

```
Python 3.10.4 (tags/v3.10.4:9d38120, Mar 23 2022, 23:13:41) [MSC v.1929 64 bit (AMD64)] on win32  
Type "help", "copyright", "credits" or "license()" for more information.  
>>> = RESTART: C:\Users\Rohith kumar\OneDrive\Desktop\AI LAB\Cript-Arithmetic problem.py  
Yes  
>>>
```