

The screenshot shows the PyCharm IDE with a project named 'pythonProject'. The file explorer on the left shows a directory structure with 'basic_deas_of_python' and 'datatypes'. The 'Recursion_Qn.py' file is open in the editor. The code defines a recursive function 'GCD(a, b)' that calculates the Greatest Common Divisor. The function uses a base case where if 'low' is 0, it returns 'high'. Otherwise, it returns 'GCD(low, high % low)'. The function is called with 'GCD(24, 36)' and the result is printed. The Run console at the bottom shows the command executed and the output '12', indicating the GCD of 24 and 36 is 12.

```
1 # 1. GCD
2
3 def GCD(a, b):
4     low = min(a, b)
5     high = max(a, b)
6
7     if low == 0:
8         return high
9     elif low == 1:
10        return 1
11    else:
12        return GCD(low, high % low)
13
14
15 print(GCD(24, 36))
16
17
18
19
20
21
22
23
24
```

Run: Recursion_Qn x

C:\Users\uswat\PycharmProjects\pythonProject\venv\Scripts\python.exe "C:\Users\uswat\PycharmProjects\pythonProject\basic_deas_of_python\datatypes\Recursion_Qn.py"

12

Process finished with exit code 0

The screenshot shows the PyCharm IDE with the same project. The 'Recursion_Qn.py' file is open, showing a recursive function 'mul(n, m)' that prints a multiplication table. The function uses a base case where if 'm' is greater than 10, it returns. Otherwise, it prints 'n * m' and calls 'mul(n, m + 1)'. The function is called with 'mul(n, 1)' after taking input from the user. The Run console at the bottom shows the command executed and the output of the multiplication table for n=4, showing products from 4*1 to 4*10.

```
25
26
27 # 2. Multiplication Table using recursion
28
29 def mul(n, m):
30     if m > 10:
31         return
32     print(n, "*", m, "=", n * m)
33     return mul(n, m + 1)
34
35
36 n = int(input("enter the number="))
37 print(mul(n, 1))
38
39
40
41
42
43
44
45
46
47
48
49
50
```

Run: Recursion_Qn x

C:\Users\uswat\PycharmProjects\pythonProject\venv\Scripts\python.exe "C:\Users\uswat\PycharmProjects\pythonProject\basic_deas_of_python\datatypes\Recursion_Qn.py"

enter the number=

4 * 1 = 4

4 * 2 = 8

4 * 3 = 12

4 * 4 = 16

4 * 5 = 20

4 * 6 = 24

4 * 7 = 28

4 * 8 = 32

4 * 9 = 36

4 * 10 = 40

None

Process finished with exit code 0

```
File Edit View Navigate Code Refactor Run Tools VCS Window Help pythonProject - Recursion_Qn.py
pythonProject basic_deas_of_python datatypes Recursion_Qn.py
Project pythonProject C:\Users\uswat\PycharmProjects\pythonProject
basic_deas_of_python
conditionalstatements
nestedif.py
question1.py
question2.py
question3.py
reverse_of_number.py
test.py
datatypes
Dictionaries.py
Dictionaries_On.py
Function_On.py
Interview_Qn.py
list_methods.py
Lists_Qn.py
methods_of_strings.py
Recursion_Qn.py
sample.py
Set.py
Set_On.py
Strings_Qn.py
Tuples.py
Tuples_On.py
forloop
Run Recursion_Qn.py
C:\Users\uswat\PycharmProjects\pythonProject\venv\Scripts\python.exe "C:\Users\uswat\PycharmProjects\pythonProject\basic_deas_of_python\datatypes\Recursion_Qn.py"
flattened list is [1, 2, 3, 4, 5, 6, 'a', 'b', 'c', 'd', 7, 8, 9]
flattened list length is 13
Process finished with exit code 0
Download pre-built shared indexes: Reduce the indexing time and CPU load with pre-built Python packages shared indexes // Always download // Download once // Don't show again // Configure... (today 09:57) 6:1 CR/LF UTF-8 4 spaces Python 3.10 (pythonProject) 30°C Haze 14:14 27-01-2023
```

```
File Edit View Navigate Code Refactor Run Tools VCS Window Help pythonProject - Recursion_Qn.py
pythonProject basic_deas_of_python datatypes Recursion_Qn.py
Project pythonProject C:\Users\uswat\PycharmProjects\pythonProject
basic_deas_of_python
conditionalstatements
nestedif.py
question1.py
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sample.py
Set.py
Set_On.py
Strings_Qn.py
Tuples.py
Tuples_On.py
forloop
Run Recursion_Qn.py
C:\Users\uswat\PycharmProjects\pythonProject\venv\Scripts\python.exe "C:\Users\uswat\PycharmProjects\pythonProject\basic_deas_of_python\datatypes\Recursion_Qn.py"
sum is : 12
Process finished with exit code 0
Download pre-built shared indexes: Reduce the indexing time and CPU load with pre-built Python packages shared indexes // Always download // Download once // Don't show again // Configure... (today 09:57) 8:41 CR/LF UTF-8 4 spaces Python 3.10 (pythonProject) 30°C Haze 14:16 27-01-2023
```

