

Министерство Высшего образования и науки РФ

Воронежский государственный университет
инженерных технологий

Кафедра информационных систем и технологий

ПОЯСНИТЕЛЬНАЯ ЗАПИСКА
к практической работе

По курсу: _____ Основы программирования _____
Наименование дисциплины

На тему: _____ Практическая работа №5 _____

Автор работы: _____ М. В. Змаева _____ группа У-215 _____
подпись, дата инициалы, фамилия

Направление подготовки 09.03.02 «Информационные системы и технологии» _____
шифр, наименование

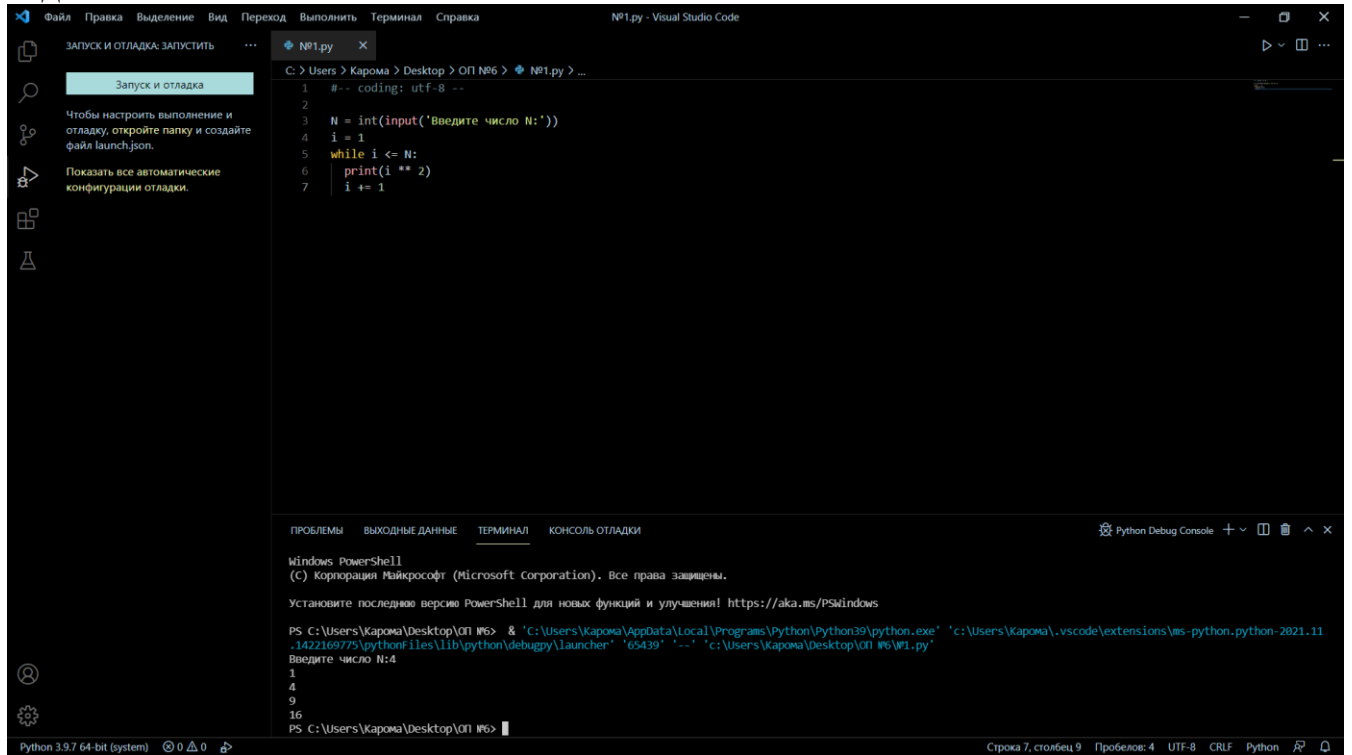
Обозначение проекта(работы): _____ ПР-06-09.03.02-10-217091-2021 _____
(ПР-номер работы-шифр направления-номер в списке-номер зачетки-год)

Руководитель _____ А. А. Маслов _____
подпись, дата инициалы, фамилия

Работа защищена _____ _____
дата оценка

Воронеж 2021

Задание 1



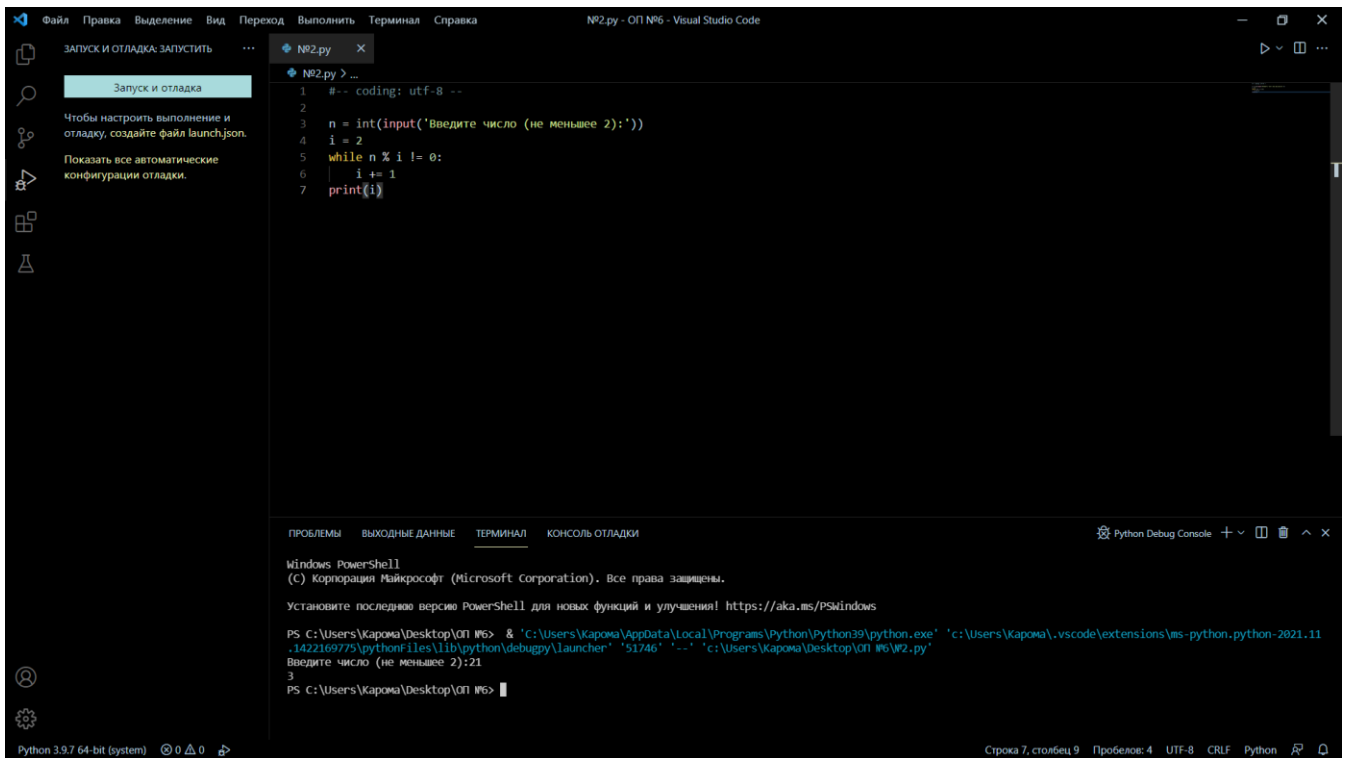
The screenshot shows the Visual Studio Code interface with a file named `N1.py` open. The code in the editor is a simple loop that calculates powers of 2. The terminal at the bottom shows the command prompt where the script was executed, and the output shows the results of the loop.

```
1 # -*- coding: utf-8 -*-
2
3 N = int(input("Введите число N:"))
4 i = 1
5 while i <= N:
6     print(i ** 2)
7     i += 1
```

Terminal output:

```
PS C:\Users\Kapoma\Desktop\ОП №6> & 'C:\Users\Kapoma\AppData\Local\Programs\Python\Python39\python.exe' 'c:\Users\Kapoma\.vscode\extensions\ms-python.python-2021.11.1422169775\pythonFiles\lib\python\debugpy\launcher' '65439' '-' 'c:\Users\Kapoma\Desktop\ОП №6\N1.py'
Введите число N:4
1
4
9
16
PS C:\Users\Kapoma\Desktop\ОП №6>
```

Задание 2



The screenshot shows the Visual Studio Code interface with a file named `N2.py` open. The code in the editor is a loop that prints the first 21 numbers of the Fibonacci sequence. The terminal at the bottom shows the command prompt where the script was executed, and the output shows the first 21 numbers of the Fibonacci sequence.

```
1 # -*- coding: utf-8 -*-
2
3 n = int(input("Введите число (не меньше 2):"))
4 i = 2
5 while n % i != 0:
6     i += 1
7 print(i)
```

Terminal output:

```
PS C:\Users\Kapoma\Desktop\ОП №6> & 'C:\Users\Kapoma\AppData\Local\Programs\Python\Python39\python.exe' 'c:\Users\Kapoma\.vscode\extensions\ms-python.python-2021.11.1422169775\pythonFiles\lib\python\debugpy\launcher' '51746' '-' 'c:\Users\Kapoma\Desktop\ОП №6\N2.py'
Введите число (не меньше 2):21
3
PS C:\Users\Kapoma\Desktop\ОП №6>
```

The screenshot shows the Visual Studio Code interface with a file explorer on the left containing files N01.py, N02.py, and N03.py. The main editor displays the content of N03.py, which is a Python script that takes a number as input and prints the number of steps required to reach 1 by either subtracting 1 or dividing by 2. The script uses a while loop and a step counter.

```
1 #-- coding: utf-8 --
2
3 n = int(input("Введите число:"))
4 a = 2
5 step = 1
6 while a <= n:
7     a *= 2
8     step += 1
9 print(step - 1)
10 print(a // 2)
```

The terminal at the bottom shows the execution of the script. It prompts the user to enter a number (not less than 2), and the user enters 21. The script then prints the number of steps (3) and the final value of 'a' (42).

```
PS C:\Users\Kapoma\Desktop\ОП №6> & 'C:\Users\Kapoma\AppData\Local\Programs\Python\Python39\python.exe' 'c:\Users\Kapoma\.vscode\extensions\ms-python.python-2021.11.1422169775\pythonFiles\lib\python\debugpy\launcher' '51746' '--' 'c:\Users\Kapoma\Desktop\ОП №6\W2.py'
Введите число (не меньше 2):21
3
PS C:\Users\Kapoma\Desktop\ОП №6> c;; cd 'c:\Users\Kapoma\Desktop\ОП №6'; & 'C:\Users\Kapoma\AppData\Local\Programs\Python\Python39\python.exe' 'c:\Users\Kapoma\.vscode\extensions\ms-python.python-2021.11.1422169775\pythonFiles\lib\python\debugpy\launcher' '57228' '--' 'c:\Users\Kapoma\Desktop\ОП №6\W3.py'
Введите число:6
2
4
PS C:\Users\Kapoma\Desktop\ОП №6>
```

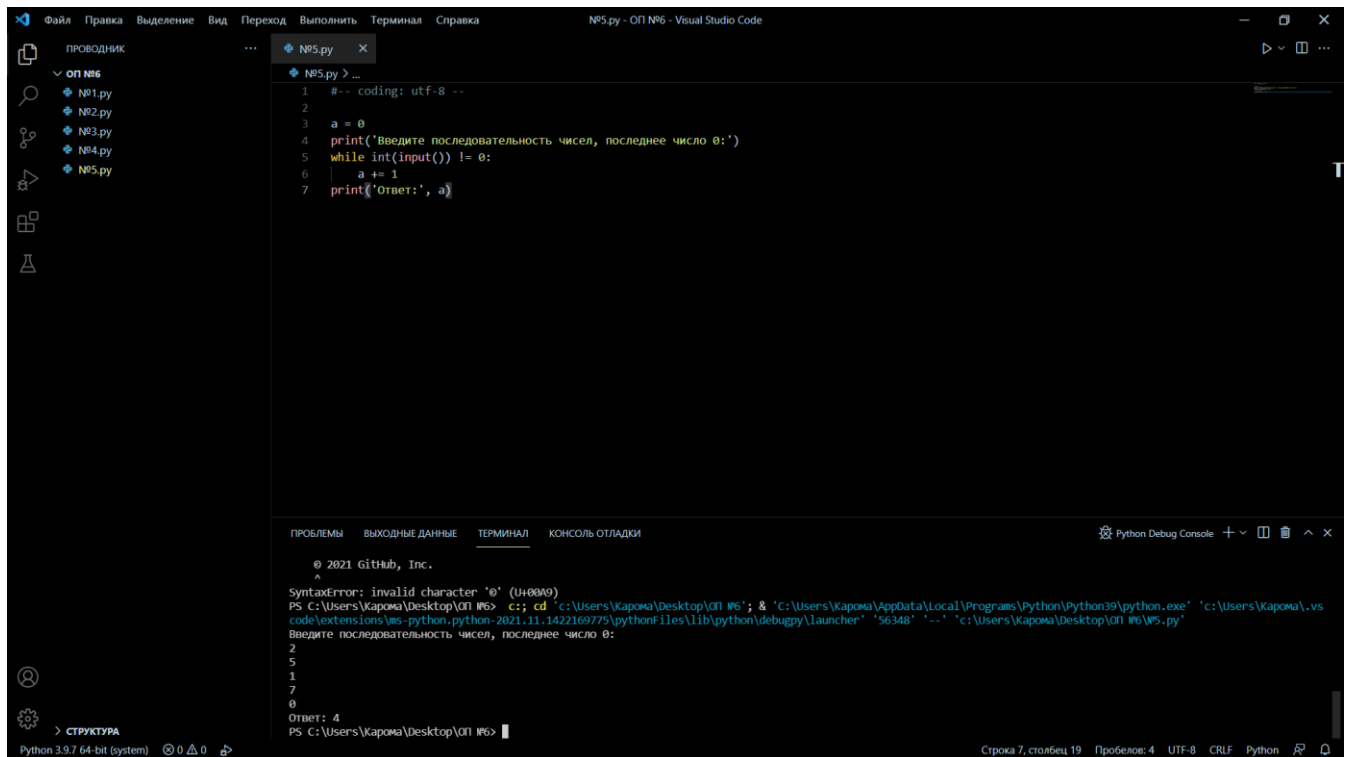
Задание 4

The screenshot shows the Visual Studio Code interface with a file explorer on the left containing files N01.py, N02.py, N03.py, and N04.py. The main editor displays the content of N04.py, which is a Python script that takes two numbers as input and prints the number of days required to reach the second number by either adding 1 or multiplying by 1.1. The script uses a while loop and a day counter.

```
1 #-- coding: utf-8 --
2
3 x = int(input("Введите количество км:"))
4 y = int(input("Введите количество км в день i:"))
5 i = 1
6 while x < y:
7     x *= 1.1
8     i += 1
9 print(i)
```

The terminal at the bottom shows the execution of the script. It prompts the user to enter a number (not less than 2), and the user enters 21. The script then prints the number of steps (3) and the final value of 'a' (42).

```
Введите число (не меньше 2):21
3
PS C:\Users\Kapoma\Desktop\ОП №6> c;; cd 'c:\Users\Kapoma\Desktop\ОП №6'; & 'C:\Users\Kapoma\AppData\Local\Programs\Python\Python39\python.exe' 'c:\Users\Kapoma\.vscode\extensions\ms-python.python-2021.11.1422169775\pythonFiles\lib\python\debugpy\launcher' '57228' '--' 'c:\Users\Kapoma\Desktop\ОП №6\W3.py'
Введите число:6
2
4
PS C:\Users\Kapoma\Desktop\ОП №6> c;; cd 'c:\Users\Kapoma\Desktop\ОП №6'; & 'C:\Users\Kapoma\AppData\Local\Programs\Python\Python39\python.exe' 'c:\Users\Kapoma\.vscode\extensions\ms-python.python-2021.11.1422169775\pythonFiles\lib\python\debugpy\launcher' '56875' '--' 'c:\Users\Kapoma\Desktop\ОП №6\W4.py'
Введите количество км:4
Введите количество км в день i:31
23
PS C:\Users\Kapoma\Desktop\ОП №6>
```



The screenshot shows the Visual Studio Code interface with a file explorer on the left containing a folder 'ОП №6' with files N01.py through N06.py. The main editor displays the code for N06.py, which is a Python script to calculate the average of a sequence of numbers. The terminal at the bottom shows the command prompt running the script, followed by user input '1 5 2 6 0' and the output 'Среднее значение суммы последовательности чисел: 3.5'.

```
1  -*- coding: utf-8 -*-
2
3  summ = 0
4  posled = 0
5  print('Введите последовательность чисел, последнее 0:')
6  element = int(input())
7  while element != 0:
8      summ += element
9      posled += 1
10     element = int(input())
11 print('Среднее значение суммы последовательности чисел:', summ / posled)
```

Python Debug Console output:

```
+ n c:: cd 'c:\Users\KapoMa\Desktop\ОП №6'; & 'C:\Users\KapoMa\AppData\ ...
+ ~
+ CategoryInfo          : ObjectNotFound: (n:String) [], CommandNotFoundException
+ FullyQualifiedErrorId : CommandNotFoundException

Введите последовательность чисел, последнее 0:
1
5
2
6
0
Среднее значение суммы последовательности чисел: 3.5
PS C:\Users\KapoMa\Desktop\ОП №6>
```

Задание 7

The screenshot shows the Visual Studio Code interface with a file explorer on the left containing a folder 'ОП №6' with files N01.py through N07.py. The main editor displays the code for N07.py, which is a Python script to calculate the sum of a sequence of numbers. The terminal at the bottom shows the command prompt running the script, followed by user input '2 6 1 6 0' and the output 'Ряд чисел: 2'.

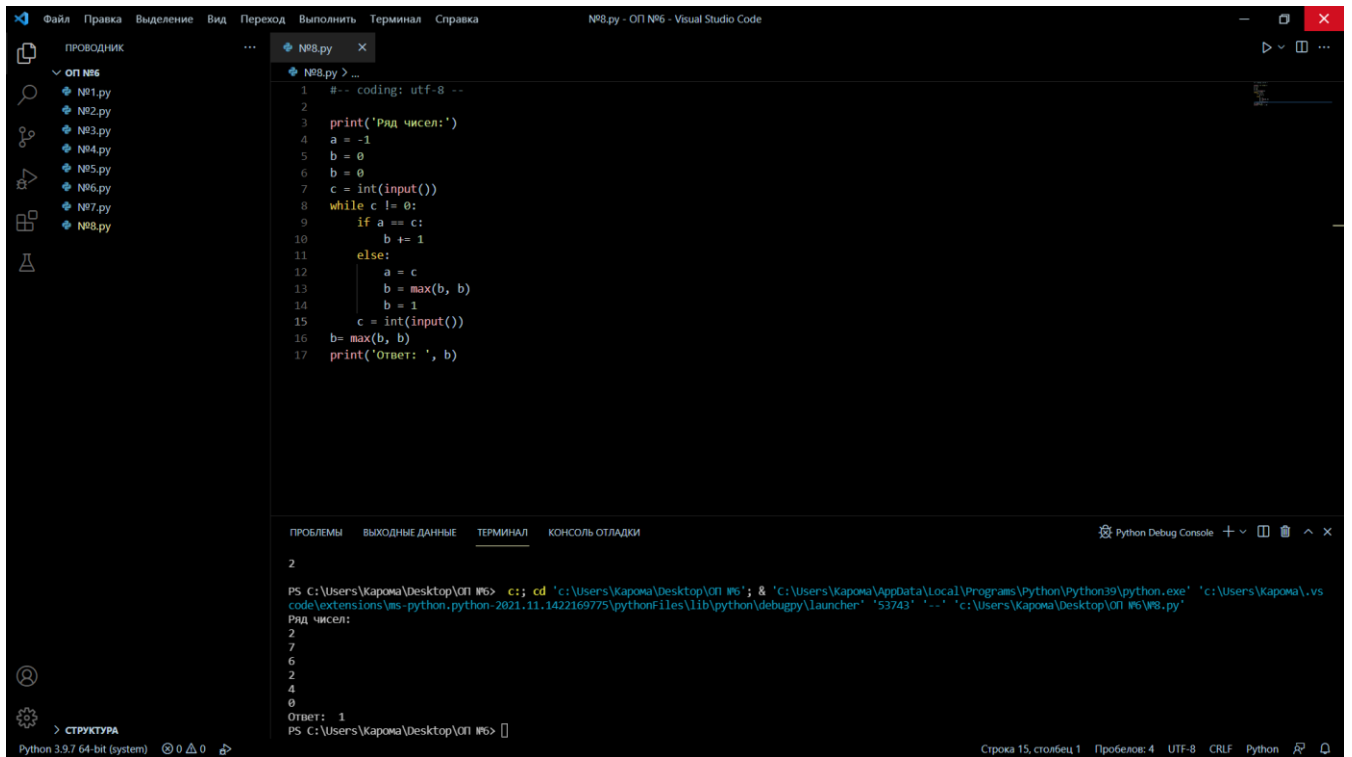
```
1  -*- coding: utf-8 -*-
2
3  print('Ряд чисел:')
4  a = int(input())
5  answer = 0
6  while a != 0:
7      next = int(input())
8      if next != 0 and a < next:
9          answer += 1
10     a = next
11 print('Ответ:', answer)
```

Python Debug Console output:

```
+ t c:: cd 'c:\Users\KapoMa\Desktop\ОП №6'; & 'C:\Users\KapoMa\AppData\ ...
+ ~
+ CategoryInfo          : ObjectNotFound: (t:String) [], CommandNotFoundException
+ FullyQualifiedErrorId : CommandNotFoundException

Ряд чисел:
2
6
1
6
0
Ответ: 2
PS C:\Users\KapoMa\Desktop\ОП №6>
```

Задание 8



The screenshot shows the Visual Studio Code interface with a Python file named `N88.py` open. The file contains a script that prints a prompt, takes input, and enters a loop. The terminal at the bottom shows the command to run the script and the resulting output.

```
1  #- coding: utf-8 --
2
3  print('Ряд чисел:')
4  a = -1
5  b = 0
6  b = 0
7  c = int(input())
8  while c != 0:
9      if a == c:
10         b += 1
11     else:
12         a = c
13         b = max(b, b)
14         b = 1
15     c = int(input())
16 b= max(b, b)
17 print('Ответ: ', b)
```

Terminal output:

```
PS C:\Users\Kapoma\Desktop\ОП №6> cd 'c:\Users\Kapoma\Desktop\ОП №6'; & 'c:\Users\Kapoma\AppData\Local\Programs\Python\Python39\python.exe' 'c:\Users\Kapoma\.vs
code\extensions\ms-python.python-2021.11.1422169775\pythonFiles\lib\python\debugpy\launcher' '53743' '-.' 'c:\Users\Kapoma\Desktop\ОП №6\N88.py'
Ряд чисел:
2
7
6
2
4
0
Ответ: 1
PS C:\Users\Kapoma\Desktop\ОП №6>
```

Bottom status bar: Python 3.9.7 64-bit (system) | 0 0 | Строка 15, столбец 1 | Пробелов: 4 | UTF-8 | CRLF | Python