

Задание 1:

Было:

```
1  #include<iostream>
2  using namespace std;
3
4  int main()
5  {
6      double a, b, S, P;
7      setlocale(LC_ALL, "Russian");
8      cout << "Ширина a="; cin >> a;
9      cout << "Высота b="; cin >> b;
10     P = (a + b) * 2;
11     S = a * b;
12     cout << "Периметр = " << P << endl;
13     cout << "Площадь = " << S << "\n" << endl;
14     for (int c = a; c > 0; c--) {
15         for (int d = b; d > 0; d--) {
16             cout << "!";
17         }
18         cout << endl;
19     }
20 }
21
22 return 0;
23
24 }
```

Стало:

```
4  void perimeterCalculation(int width, int length, int perimeter);
5  void printPerimeterCalculation(int perimeter);
6  void squareCalculation(int width, int length, int square);
7  void printSquareCalculation(int square);
8  void drawingRectangle(int width, int length);
9
10 int main()
11 {
12     cout << "Exercises 1:\n";
13     int width, length;
14     cout << "Enter the width = "; cin >> width;
15     cout << "Enter the length = "; cin >> length;
16     if (width <= 0 || length <= 0) {
17         cout << "invalid numeric input\n";
18     }
19     else {
20         int perimeter = 0;
21         perimeterCalculation(width, length, perimeter);
22         int square = 0;
23         squareCalculation(width, length, square);
24         drawingRectangle(width, length);
25     }
26 }
27
28 void perimeterCalculation(int width, int length, int perimeter) {
29     perimeter = (width + length) * 2;
30     printPerimeterCalculation(perimeter);
31 }
32
33 void printPerimeterCalculation(int perimeter) {
34     cout << "Perimeter = " << perimeter << endl;
35 }
36
37 void squareCalculation(int width, int length, int square) {
38     square = width * length;
39     printSquareCalculation(square);
40 }
41
42 void printSquareCalculation(int square) {
43     cout << "Square = " << square << "\n" << endl;
44 }
45
46 void drawingRectangle(int width, int length) {
47     for (int i = width; i > 0; i--) {
48         for (int j = length; j > 0; j--) {
49             cout << "!";
50         }
51         cout << endl;
52     }
53 }
```

Итог: 1) переименованы переменные:

a=width; b=length; S=square; P=perimeter.

2) Созданы функции подсчёта периметра, площади, и выводение рисунка прямоугольника.

3) В функциях добавлены подфункции вывода окончательного значения.

Задание 2:

Было:

```
1  #include<iostream>
2  using namespace std;
3
4  int main()
5  {
6      int n,a,b,c,d,e;
7      cout << "Enter the number n = "; cin >> n;
8      a = 0;
9      b = 1;
10     c = 1;
11     cout << "Fibonacci numbers: ";
12     for (int e =0; e <n; e++) {
13         d = a+b;
14         a=b;
15         b = d;
16         cout << d << " ";
17         c = c *d;
18     }
19     cout << endl;
20     cout << "n! = " << c<<endl;
21     return 0;
22 }
23
```

Стало:

```

73 void fibonacciNumber(int number, int a, int b, int fibonacciNumbers) {
74     for (int e = 0; e < number; e++) {
75         fibonacciNumbers = a + b;
76         a = b;
77         b = fibonacciNumbers;
78         printFibonacci(fibonacciNumbers);
79     }
80 }
81
82 void printFibonacci(int fibonacciNumbers) {
83     cout << fibonacciNumbers << " ";
84 }
85
86 void factotialNumber(int number, int factorialNumber, int fibonacciNumbers, int a, int b) {
87     for (int i = 1; i <= number; i++) {
88         factorialNumber = factorialNumber * i;
89     }
90     printFactorial(factorialNumber);
91 }
92
93 void printFactorial(int factorialNumber) {
94     cout << endl;
95     cout << "The factorial of a number is = " << factorialNumber << endl;
96 }

```

```

9 void fibonacciNumber(int number, int a, int b, int fibonacciNumbers);
10 void factotialNumber(int number, int factorialNumber, int fibonacciNumbers, int a, int b);
11 void printFactorial(int factorialNumber);
12 void printFibonacci(int fibonacciNumbers);
13
14 int main()
15 {
16     cout << "Exercises 1:\n";
17     int width, length;
18     cout << "Enter the width = "; cin >> width;
19     cout << "Enter the length = "; cin >> length;
20     if (width <= 0 || length <= 0) {
21         cout << "invalid numeric input\n";
22     }
23     else {
24         int perimeter = 0;
25         perimeterCalculation(width, length, perimeter);
26         int square = 0;
27         squareCalculation(width, length, square);
28         drawingRectangle(width, length);
29     }
30
31     cout << "\nExercises 2:\n";
32     int number, fibonacciNumbers = 0;
33     cout << "Enter the number = "; cin >> number;
34     if (number <= 0) {
35         cout << "Invalid numeric input\n";
36     }
37     else {
38         int a = 0, b = 1;
39         int factorialNumber = 1;
40         cout << "Fibonacci numbers: ";
41         fibonacciNumber(number, a, b, fibonacciNumbers);
42         factotialNumber(number, factorialNumber, fibonacciNumbers, a, b);

```

Итог:

1) Переименованы переменные:

n=number; d=fibonacciNumber; c=factotialNumber.

2) Добавлены функции подсчёта факториала и чисел Фибоначчи.

3) В функции добавлены подфункции вывода.

Задание 3:

Было:

```
5  int main() {
6      setlocale(LC_ALL, "Rus");
7      int a, b, i;
8      cout << "Введите первое число"; cin >> a;
9      cout << "Введите второе число"; cin >> b;
10     cout << endl;
11     for (i = 2; i < a; i++) {
12         if (a % i == 0) {
13             cout << a << "Не простое число " << endl;
14             break;
15         }
16         else if (i == a - 1) {
17             cout << a << "Простое число " << endl;
18             break;
19         }
20     }
21     for (i = 2; i < b; i++) {
22         if (b % i == 0) {
23             cout << b << "Не простое число " << endl;
24             break;
25         }
26         else if (i == b - 1) {
27             cout << b << "Простое число " << endl;
28             break;
29         }
30     }
31     cout << endl;
32     for (i = min(a, b); i >= 1; i--) {
33         if (a % i == 0 && b % i == 0) {
34             cout << "НОД равен " << i << endl;
35             break;
36         }
37     }
38     cout << endl;
39     system("pause");
40 }
```

Стало:

```
48     cout << "\nExercises 3:\n ";
49     int numberFirst, numberSecond;
50     cout << "Enter the first number: "; cin >> numberFirst;
51     cout << "Enter the second number: "; cin >> numberSecond;
52     cout << endl;
53     determiningTheTypeOfTheFirstNumber(numberFirst);
54     determiningTheTypeOfTheSecondNumber(numberSecond);
55     node(numberFirst, numberSecond);
```

```

111 void determiningTheTypeOfTheFirstNumber(int numberFirst) {
112     for (int i = 2; i < numberFirst; i++) {
113         if (numberFirst % i == 0) {
114             cout << numberFirst << " Not a prime number" << endl;
115             break;
116         }
117         else if (i == numberFirst - 1) {
118             cout << numberFirst << " Prime number" << endl;
119             break;
120         }
121     }
122 }
123
124 void determiningTheTypeOfTheSecondNumber(int numberSecond) {
125     for (int i = 2; i < numberSecond; i++) {
126         if (numberSecond % i == 0) {
127             cout << numberSecond << " Not a prime number" << endl;
128             break;
129         }
130         else if (i == numberSecond - 1) {
131             cout << numberSecond << " Prime number" << endl;
132             break;
133         }
134     }
135 }
136
137 void node(int numberFirst, int numberSecond) {
138     for (int i = min(numberFirst, numberSecond); i >= 1; i--) {
139         if (numberFirst % i == 0 && numberSecond % i == 0) {
140             cout << "NOD = " << i << endl;
141             break;
142         }
143     }
144 }

```

% Проблемы не найдены.

во

Итог:

- 1) Переименованы переменные:
a = numberFirst; b = numberFirts;
- 2) Добавлены функции: подсчёта НОД, и определения (простое или непростое число).

Задание 4:

Было:


```

1  #include<iostream>
2  using namespace std;
3
4  int main() {
5      int a, b, c;
6      cout << "Enter the number "; cin >> a;
7      b = 0;
8      c = 0;
9      while (a >=1) {
10         b = a % 2 * pow(10, c)+b;
11         a = a / 2;
12         c++;
13     }
14     cout << b;
15     return 0;
16 }

```

Стало:

```

59     cout << "\nExercises 4:\n";
60     int numb, binaryRepresentationNumber = 0, count = 0;
61     cout << "Enter the number "; cin >> numb;
62     binaryRepresentationOfANumber(numb, binaryRepresentationNumber, count);

```

```

152 void binaryRepresentationOfANumber(int numb, int binaryRepresentationNumber, int count) {
153     while (numb >= 1) {
154         binaryRepresentationNumber = numb % 2 * pow(10, count) + binaryRepresentationNumber;
155         numb = numb / 2;
156         count++;
157     }
158     printBinaryRepresentationOfANumber(binaryRepresentationNumber);
159 }
160
161 void printBinaryRepresentationOfANumber(int binaryRepresentationNumber) {
162     cout << binaryRepresentationNumber;
163 }

```

Итог:

- 1) Переименованы переменные: a = numb;
b=binaryRepresentationNumber; c=count
- 2) Добавлена функция перевода числа в двоичную систему.
- 3) Добавлена подфункция вывода двоичной системы.