Practice WORK REPORT №5

« Simple digital circuits design and simulation »

**Principles of Circuits**

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Program of Automation

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# Task 1

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| A | B | C |  |  |
| 0 | 0 | 0 | 1 | 1 |
| 0 | 0 | 1 | 0 | 0 |
| 0 | 1 | 0 | 0 | 0 |
| 0 | 1 | 1 | 0 | 0 |
| 1 | 0 | 0 | 1 | 1 |
| 1 | 0 | 1 | 0 | 0 |
| 1 | 1 | 0 | 0 | 0 |
| 1 | 1 | 1 | 0 | 0 |

# Task 2



= A+B

Karnaugh map

|  |  |  |
| --- | --- | --- |
|  |  | C |
|  |  |  |
|  | 1 | 1 |
|  | 1 | 1 |
|  | 1 | 1 |

True table

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| A | B | C |  |  |
| 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 1 | 0 | 0 |
| 0 | 1 | 0 | 1 | 1 |
| 0 | 1 | 1 | 1 | 1 |
| 1 | 0 | 0 | 1 | 1 |
| 1 | 0 | 1 | 1 | 1 |
| 1 | 1 | 0 | 1 | 1 |
| 1 | 1 | 1 | 1 | 1 |

# Conclusion

The practice demonstrated the utility of Boolean algebra and Karnaugh maps in designing and optimizing digital circuits. These methods are effective tools for simplifying complex logic expressions and ensuring efficient circuit implementation.