МИНИСТЕРСТВО НАУКИ И ВЫСШЕГО ОБРАЗОВАНИЯ РОССИЙСКОЙ ФЕДЕРАЦИИ

ФЕДЕРАЛЬНОЕ ГОСУДАРСТВЕННОЕ АВТОНОМНОЕ

ОБРАЗОВАТЕЛЬНОЕ УЧРЕЖДЕНИЕ ВЫСШЕГО ОБРАЗОВАНИЯ

«Национальный исследовательский университет ИТМО»

ФАКУЛЬТЕТ ПРОГРАММНОЙ ИНЖЕНЕРИИ И КОМПЬЮТЕРНОЙ ТЕХНИКИ

**Домашняя работа №3**

по дисциплине

«Дискретная математика»

Вариант № 103

**Группа:** P3112

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1. *А* = 62, *В* = 59.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *А* > 0, *B* > 0. | | | | | | | | | Интерпретации | | | |
|  |  |  |  |  |  |  |  |  |  | Знаковая |  | Беззнаковая |
| *А*пр. | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 |  | 62 |  | 62 |
| *B*пр. | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 |  | 59 |  | 59 |
| *С*пр. | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |  | 3 |  | 3 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| CF=0, | ZF=0, | PF=1, | AF=0, | SF=0, | OF=0. |  |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *А* < 0, *B* > 0. | | | | | | | | | Интерпретации | | | |
|  |  |  |  |  |  |  |  |  |  | Знаковая |  | Беззнаковая |
| *A*доп. | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |  | -62 |  | 193 |
| *B*пр. | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 |  | 59 |  | 59 |
| *C*доп. | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |  |  |  | 134 |
| *C*пр. | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 |  | -121 |  |  |

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| CF=0, | ZF=0, | PF=0, | AF=1, | SF=1, | OF=0. |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *А* > 0, *B <* 0. | | | | | | | | | Интерпретации | | | |
|  |  |  |  |  |  |  |  |  |  | Знаковая |  | Беззнаковая |
| *А*пр. | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 |  | 62 |  | 62 |
| *B*доп. | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 |  | -59 |  | 196 |
| *С*пр. | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 |  | 121 |  | 121? |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| CF=1, | ZF=0, | PF=0, | AF=0, | SF=0, | OF=0. |  |

Для беззнаковой интерпретации результат неверен вследствие возникающего заёма из разряда за пределами формата.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *А <* 0, *B <* 0. | | | | | | | | | Интерпретации | | | |
|  |  |  |  |  |  |  |  |  |  | Знаковая |  | Беззнаковая |
| *А*доп. | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |  | -62 |  | 193 |
| *B*доп. | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 |  | -59 |  | 196 |
| *С*доп. | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 |  |  |  | 253? |
| *С*пр. | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 |  | -3 |  |  |

|  |  |  |  |  |  |  |
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| CF=1, | ZF=0, | PF=0, | AF=1, | SF=1, | OF=0. |  |

Для беззнаковой интерпретации результат неверен вследствие возникающего заёма из разряда за пределами формата.

1. *А + В* > 128, значит 127*>B* >128 - *A*, A=62 (неизменно), пусть *В* = 77.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *В* | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 1 |

*А*

7 0 7 0

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *А <* 0, *B* > 0. | | | | | | | | | Интерпретации | | | |
|  |  |  |  |  |  |  |  |  |  | Знаковая |  | Беззнаковая |
| *А*доп. | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |  | -62 |  | 194 |
| *B*пр. | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 1 |  | 77 |  | 77 |
| *С*пр. | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 |  | 117? |  | 117 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| CF=0, | ZF=0, | PF=0, | AF=0, | SF=0, | OF=1. |

Для знаковой интерпретации результат является некорректным вследствие возникающего переполнения.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *А* > 0, *B* < 0. | | | | | | | | | Интерпретации | | | |
|  |  |  |  |  |  |  |  |  |  | Знаковая |  | Беззнаковая |
| *A*пр. | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 |  | 62 |  | 67 |
| *B*доп. | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 1 |  | -77 |  | 179 |
| *C*доп. | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 |  |  |  | 139? |
| *C*пр. | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 |  | -117? |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| CF=1, | ZF=0, | PF=1, | AF=0, | SF=1, | OF=1. |

Для знаковой интерпретации результат некорректен вследствие возникающего переполнения, для беззнаковой интерпретации результат некорректен из-за возникающего заёма из старшего разряда.

1. Значение числа *В* фиксируем (*В* = 59), а значение *А* подбираем согласно формуле *А + В* = 128, по которой при сложении положительных чисел будет фиксироваться переполнение, а при сложении отрицательных этого не будет. Тогда *А* = 69.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *B* | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 |

*А*

7 0 7 0

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *А* > 0, *B* < 0. | | | | | | | | | Интерпретации | | | |
|  |  |  |  |  |  |  |  |  |  | Знаковая |  | Беззнаковая |
| *A*пр. | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 |  | 69 |  | 69 |
| *B*доп. | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 |  | -59 |  | 197 |
| *C.* | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | -128? |  | 128? |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| CF=1, | ZF=0, | PF=0, | AF=0, | SF=1, | OF=1. |

Результат беззнаковой интерпретации некорректен вследствие возникающего заёма из разряда за пределами формата, для знаковой интерпретации результат некорректен из-за переполнения.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *А* < 0, *B* > 0. | | | | | | | | | Интерпретации | | | |
|  |  |  |  |  |  |  |  |  |  | Знаковая |  | Беззнаковая |
| *A*доп. | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 |  | -69 |  | 187 |
| *B*пр. | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 |  | 59 |  | 59 |
| *C*. | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | -128 |  | 128 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| CF=0, | ZF=0, | PF=0, | AF=0, | SF=1, | OF=0. |
|  |  |  |  |  |  |

Результаты знаковой и беззнаковой интерпретаций корректны.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *А* < 0, *B* < 0. | | | | | | | | | Интерпретации | | | |
|  |  |  |  |  |  |  |  |  |  | Знаковая |  | Беззнаковая |
| *А*доп. | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1 |  | 91 |  | 91 |
| *B*доп. | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 |  | 37 |  | 37 |
| *С*доп. | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  |  |  | 128? |
| *С*пр. | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | -128 |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| CF=1, | ZF=0, | PF=0, | AF=1, | SF=1, | OF=0. |

Для беззнаковой интерпретации результат неверен вследствие возникающего переноса из старшего разряда, результат знаковой интерпретации корректен.