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 №2**

по дисциплине

«Дискретная математика»

Вариант № 102

**Группа:** P3110

**Выполнил**: Ахроров К

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1. *А* = 83, *В* = 37.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *А* > 0, *B* > 0. | | | | | | | | | Интерпретации | | | |
|  |  |  |  |  |  |  |  |  |  | Знаковая |  | Беззнаковая |
| *А*пр. | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 |  | 83 |  | 83 |
| *B*пр. | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 |  | 37 |  | 37 |
| *С*пр. | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 |  | 120 |  | 120 |

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

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *А* > 0, *B <* 0. | | | | | | | | | Интерпретации | | | |
|  |  |  |  |  |  |  |  |  |  | Знаковая |  | Беззнаковая |
| *А*пр. | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 |  | 83 |  | 83 |
| *B*доп. | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 |  | -37 |  | 219 |
| *С*пр. | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 |  | 46 |  | 46? |

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

Для беззнаковой интерпретации результат неверен вследствие возникающего переноса из старшего разряда. Вес этого переноса 256.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *А <* 0, *B >* 0. | | | | | | | | | Интерпретации | | | |
|  |  |  |  |  |  |  |  |  |  | Знаковая |  | Беззнаковая |
| *А*доп. | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 |  | -83 |  | 173 |
| *B*пр. | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 |  | 37 |  | 37 |
| *С*доп. | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 |  |  |  | 210 |
| *С*пр. | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 |  | -46 |  |  |

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

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *А <* 0, *B <* 0. | | | | | | | | | Интерпретации | | | |
|  |  |  |  |  |  |  |  |  |  | Знаковая |  | Беззнаковая |
| *А*доп. | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 |  | -83 |  | 173 |
| *B*доп. | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 |  | -37 |  | 219 |
| *С*доп. | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |  |  |  | 392 |
| *С*пр. | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 |  | -120 |  |  |

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

Для беззнаковой интерпретации результат неверен вследствие возникающего переноса из старшего разряда. Вес этого переноса 256.

1. *А + В* > 128, значит 127*>B* >128 - *A*, пусть *В* = 115.

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

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

*А*

7 0 7 0

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *А* > 0, *B* > 0. | | | | | | | | | Интерпретации | | | |
|  |  |  |  |  |  |  |  |  |  | Знаковая |  | Беззнаковая |
| *А*пр. | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 |  | 83 |  | 83 |
| *B*пр. | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 |  | 115 |  | 115 |
| *С*доп. | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 |  |  |  | 198 |
| *С*пр. | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 |  | -58? |  |  |

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

Для знакового сложения результат является некорректным вследствие переполнения формата.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *А <* 0, *B <* 0. | | | | | | | | | Интерпретации | | | |
|  |  |  |  |  |  |  |  |  |  | Знаковая |  | Беззнаковая |
| *А*доп. | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 0 |  | -83 |  | 172 |
| *B*доп. | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 |  | -115 |  | 140 |
| *С*пр. | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 |  |  |  | 312 |

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

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

1. Значение числа *В* фиксируем (*В* = 37), 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* = 91.

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

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

*А*

7 0 7 0

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *А* > 0, *B* > 0. | | | | | | | Интерпретации | | | | | | |
|  |  |  |  |  |  |  | |  |  |  | Знаковая |  | Беззнаковая | |
| *А*пр. | 0 | 1 | 0 | 1 | 1 | 0 | | 1 | 1 |  | 91 |  | 91 | |
| *B*пр. | 0 | 0 | 1 | 0 | 0 | 1 | | 0 | 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=0, | ZF=0, | PF=0, | AF=1, | SF=1, | OF=1. |

Для знаковой интерпретации результат некорректен вследствие возникающего переполнения.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *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.