Санкт-Петербургский Национальный Исследовательский Университет ИТМО

Факультет программной инженерии и компьютерной техники

Домашняя работа №3

По дисциплине

“Дискретная математика”

Вариант 15

Выполнил:

Студент группы P3117

Пономарёв М. И.

Преподаватель:

Поляков В. И.



|  |  |  |
| --- | --- | --- |
| № | *A* | *B* |
| **15.** | 54 | 66 |

1. *А* = 54, *В* = 66.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *А* > 0, *B* > 0. | | | | | | | | | Интерпретации | | | |
|  |  |  |  |  |  |  |  |  |  | Знаковая |  | Беззнаковая |
| *A*пр. | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 |  | 54 |  | 54 |
| *B*пр. | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |  | 66 |  | 66 |
| *C*доп. | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 |  |  |  | 244? |
| *C*пр. | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 |  | -12 |  |  |

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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.

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *А* < 0, *B* > 0. | | | | | | | | | Интерпретации | | | |
|  |  |  |  |  |  |  |  |  |  | Знаковая |  | Беззнаковая |
| *A*доп. | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 |  | -54 |  | 202 |
| *B*пр. | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |  | 66 |  | 66 |
| *C*доп. | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |  |  |  | 136 |
| *C*пр. | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 |  | -120 |  |  |

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

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *А* > 0, *B* < 0. | | | | | | | | | Интерпретации | | | |
|  |  |  |  |  |  |  |  |  |  | Знаковая |  | Беззнаковая |
| *A*пр. | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 |  | 54 |  | 54 |
| *B*доп. | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 |  | -66 |  | 190 |
| *C*пр. | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 |  | 120 |  | 120? |

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| --- | --- | --- | --- | --- | --- |
| CF=1, | ZF=0, | PF=1, | AF=1, | SF=0, | OF=1. |
| Для беззнаковой интерпретации результат неверен вследствие возникающего заёма из разряда за пределами формата | | | | | | | |
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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *А* < 0, *B* < 0. | | | | | | | | | Интерпретации | | | |
|  |  |  |  |  |  |  |  |  |  | Знаковая |  | Беззнаковая |
| *A*доп. | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 |  | -54 |  | 202 |
| *B*доп. | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 |  | -66 |  | 190 |
| *Cпр*. | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 |  | 12 |  | 12 |

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

1. Правило для подбора выглядит следующим образом:

*А + В* > 128, значит 128 – *А < В* < 127

*А* = 67 (неизменно), *В* = 69 (подбираем).

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| *А* < 0, *B* > 0. | | | | | | | | | Интерпретации | | | |
|  |  |  |  |  |  |  |  |  |  | Знаковая |  | Беззнаковая |
| *A*доп. | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 |  | -67 |  | 189 |
| *B*пр. | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 |  | 69 |  | 64 |
| *C*пр. | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 |  | 125? |  | 125 |

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| --- | --- | --- | --- | --- | --- |
| CF=0, | ZF=0, | PF=1, | AF=1, | SF=0, | OF=1. |
| Для знаковой интерпретации результат некорректен вследствие возникающего переполнения | | | | | | | |

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| *А* > 0, *B* < 0. | | | | | | | | | Интерпретации | | | |
|  |  |  |  |  |  |  |  |  |  | Знаковая |  | Беззнаковая |
| *A*пр. | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 |  | 67 |  | 67 |
| *B*доп. | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 |  | -69 |  | 187 |
| *C*доп. | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |  |  |  | 136? |
| *C*пр. | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 |  | -120? |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| CF=1, | ZF=0, | PF=1, | AF=1, | 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* = 43), а значение *А* подбираем согласно формуле *А + В* = 128, благодаря которой при вычитании из положительного числа отрицательного будет фиксироваться переполнение, а при вычитании из отрицательного числа положительного не будет. Тогда *А* = 85.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *А* > 0, *B* < 0. | | | | | | | | | Интерпретации | | | |
|  |  |  |  |  |  |  |  |  |  | Знаковая |  | Беззнаковая |
| *A*пр. | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 |  | 85 |  | 85 |
| *B*доп. | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 |  | -43 |  | 213 |
| *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.

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *А* < 0, *B* > 0. | | | | | | | | | Интерпретации | | | |
|  |  |  |  |  |  |  |  |  |  | Знаковая |  | Беззнаковая |
| *A*доп. | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 |  | -85 |  | 171 |
| *B*пр. | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 |  | 43 |  | 43 |
| *Cпр.* | 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.