**Дискретная математика**

Домашнее задание №3

«Представление чисел с фиксированной и плавающей запятой в различных форматах»

Вариант №2

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Варианты задания

|  |  |
| --- | --- |
| ***A*** | ***B*** |
| 81 | 43 |

1. *А* = 81, *В* = 43.

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| *А* > 0, *B* > 0. | | | | | | | | | Интерпретации | | | |
|  |  |  |  |  |  |  |  |  |  | Знаковая |  | Беззнаковая |
| *A*пр. | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 |  | 81 |  | 81 |
| *B*пр. | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 |  | 43 |  | 43 |
| *C*пр. | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 |  | 38 |  | 38 |

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

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| *А* < 0, *B* > 0. | | | | | | | | | Интерпретации | | | |
|  |  |  |  |  |  |  |  |  |  | Знаковая |  | Беззнаковая |
| *A*доп. | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 |  | -81 |  | 175 |
| *B*пр. | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 |  | 43 |  | 43 |
| *C*доп. | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |  |  |  | 132 |
| *C*пр. | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |  | -3 |  |  |

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

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| *А* > 0, *B* < 0. | | | | | | | | | Интерпретации | | | |
|  |  |  |  |  |  |  |  |  |  | Знаковая |  | Беззнаковая |
| *A*пр. | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 |  | 81 |  | 81 |
| *B*доп. | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 |  | -43 |  | 213 |
| *C*пр. | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 |  | 124 |  | 124? |

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| --- | --- | --- | --- | --- | --- |
| CF=1, | ZF=0, | PF=0, | AF=1, | SF=0, | 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 | 0 | 1 | 0 | 1 | 1 | 1 | 1 |  | -81 |  | 175 |
| *B*доп. | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 |  | -43 |  | 213 |
| *C*доп. | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 |  |  |  | 214? |
| *C*пр. | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 0 |  | -38 |  |  |

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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. Правило для подбора выглядит следующим образом:

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

*А* = 81 (неизменно), *В* = 70 (подбираем).

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| *А* < 0, *B* > 0. | | | | | | | | | Интерпретации | | | |
|  |  |  |  |  |  |  |  |  |  | Знаковая |  | Беззнаковая |
| *A*доп. | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 |  | -81 |  | 175 |
| *B*пр. | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 |  | 70 |  | 70 |
| *C*пр. | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 1 |  | 105? |  | 105 |

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| CF=0, | ZF=0, | PF=1, | AF=0, | 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 | 1 | 0 | 0 | 0 | 1 |  | 81 |  | 81 |
| *B*доп. | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 |  | -70 |  | 186 |
| *C*доп. | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 |  |  |  | 151? |
| *C*пр. | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 |  | -105? |  |  |

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| CF=1, | ZF=0, | PF=0, | 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* = 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.

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| *А* > 0, *B* < 0. | | | | | | | | | Интерпретации | | | |
|  |  |  |  |  |  |  |  |  |  | Знаковая |  | Беззнаковая |
| *A*пр. | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 |  | 85 |  | 85 |
| *B*доп. | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 |  | -43 |  | 213 |
| *C*пр. | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | -128? |  | 128? |

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| 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 |
| *C*доп. | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | -128 |  | 128 |

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

Результаты знаковой и беззнаковой интерпретаций корректны.