**Дискретная математика**

Домашнее задание №2

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

Вариант №1

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Варианты задания

|  |  |
| --- | --- |
| ***A*** | ***B*** |
| 78 | 41 |

1. *А* = 78, *В* = 41.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *А* > 0, *B* > 0. | | | | | | | | | Интерпретации | | | |
|  |  |  |  |  |  |  |  |  |  | Знаковая |  | Беззнаковая |
| *А*пр. | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 |  | 78 |  | 78 |
| *B*пр. | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 |  | 41 |  | 41 |
| *С*пр. | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 |  | 119 |  | 119 |

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

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *А* > 0, *B* < 0. | | | | | | | | | Интерпретации | | | |
|  |  |  |  |  |  |  |  |  |  | Знаковая |  | Беззнаковая |
| *А*пр. | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 |  | 78 |  | 78 |
| *B*доп. | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 |  | -41 |  | 215 |
| *С*пр. | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 |  | 37 |  | 37? |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| CF=1, | ZF=0, | PF=0, | AF=0, | SF=0, | OF=0. |  |
| Для беззнаковой интерпретации результат неверен вследствие возникающего переноса из старшего разряда. Вес этого переноса составляет 256. | | | | | | |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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|  | | | | | | | | | | | | | | |
| |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | *А* < 0, *B* > 0. | | | | | | | | | Интерпретации | | | | |  |  |  |  |  |  |  |  |  |  | Знаковая |  | Беззнаковая | | | *А*доп | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 |  | -78 |  | 178 | | | *B*пр. | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 |  | 49 |  | 49 | | | *С*доп. | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 |  |  |  | 219 | | | *С*пр. | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1 |  | -37 |  | |  | |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | CF=0, | ZF=0, | PF=1, | AF=0, | SF=1, | OF=0. | | | | | | | | | | | | | | | |
| *А* < 0, *B* < 0. | | | | | | | | | Интерпретации | | | |
|  |  |  |  |  |  |  |  |  |  | Знаковая |  | Беззнаковая |
| *А*доп. | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 |  | -78 |  | 178 |
| *B*доп. | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 |  | -41 |  | 215 |
| *С*доп. | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |  |  |  | 137? |
| *С*пр. | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 |  | -119 |  |  |

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

Для БзИ результат неверен вследствие возникающего переноса из старшего разряда. Вес этого переноса составляет 256.

1. Правилодля подбора выглядит следующим образом:

*А + В* > 128, значит 127*>B* >128 - *A*, пусть *В* = 60.

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

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

*А*

7 0 7 0

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *А* > 0, *B* > 0. | | | | | | | | | Интерпретации | | | |
|  |  |  |  |  |  |  |  |  |  | Знаковая |  | Беззнаковая |
| *А*пр. | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 |  | 78 |  | 78 |
| *B*пр. | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 |  | 60 |  | 60 |
| *С*доп. | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 |  | -138? |  | 138 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| CF=0, | ZF=0, | PF=0, | AF=1, | 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 | 1 | 0 | 0 | 1 | 0 |  | -78 |  | 178 |
| *B*доп. | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 |  | -60 |  | 194 |
| *С*пр. | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 |  | 118? |  | 118? |

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

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

**3.** Значение числа *В* фиксируем (*В* = 49), 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* = 87.

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

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

*А*

7 0 7 0

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *А* > 0, *B* > 0. | | | | | | | Интерпретации | | | | | | |
|  |  |  |  |  |  |  | |  |  |  | Знаковая |  | Беззнаковая | |
| *А*пр. | 0 | 1 | 0 | 1 | 0 | 1 | | 1 | 1 |  | 87 |  | 87 | |
| *B*пр. | 0 | 0 | 1 | 0 | 1 | 0 | | 0 | 1 |  | 41 |  | 41 | |
| *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 | 1 | 0 | 0 | 1 |  | -87 |  | 169 |
| *B*доп. | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 |  | -41 |  | 215 |
| *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.