Санкт-Петербургский национальный исследовательский университет ИТМО Факультет программной инженерии и компьютерной техники

**Домашняя работа №1**

по дисциплине “Дискретная математика”

вариант 51

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группа P3131

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Санкт-Петербург

~2023~

|  |  |
| --- | --- |
| **А** | **В** |
| **67** | **46** |

**Задание 1:**

А = 67, В = 46.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *А* > 0, *B* > 0. | | | | | | | | | | Интерпретации | | | | |
|  |  |  |  |  |  |  |  |  |  | | Знаковая |  | Беззнаковая |
| *A*пр. | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 |  | | 67 |  | 67 |
| *B*пр. | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 |  | | 46 |  | 46 |
| *C*пр. | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 |  | | 21 |  | 21 |

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

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *А* < 0, *B* > 0. | | | | | | | | | Интерпретации | | | |
|  |  |  |  |  |  |  |  |  |  | Знаковая |  | Беззнаковая |
| *A*доп. | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 |  | -67 |  | 189 |
| *B*пр. | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 |  | 46 |  | 46 |
| *C*доп. | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 |  |  |  | 143 |
| *C*пр. | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 |  | -113 |  |  |

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

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *А* > 0, *B* < 0. | | | | | | | | | Интерпретации | | | |
|  |  |  |  |  |  |  |  |  |  | Знаковая |  | Беззнаковая |
| *A*пр. | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 |  | 67 |  | 67 |
| *B*доп. | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 |  | -46 |  | 209 |
| *C*пр. | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 |  | 113 |  | 113? |

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.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *А* < 0, *B* < 0. | | | | | | | | | Интерпретации | | | |
|  |  |  |  |  |  |  |  |  |  | Знаковая |  | Беззнаковая |
| *A*доп. | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 |  | -67 |  | 189 |
| *B*доп. | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 |  | -46 |  | 209 |
| *C*доп. | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 |  |  |  | 235? |
| *C*пр. | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 |  | -21 |  |  |

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

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

**Задание 2:**

Правило для подбора выглядит следующим образом:

A + B > 128 🡪 128 – A < B < 127

A = 67, B = 64(Подбором)

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

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

Для знаковой интерпретации результат некорректен вследствие возникающего переполнения

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *А* > 0, *B* < 0. | | | | | | | | | Интерпретации | | | |
|  |  |  |  |  |  |  |  |  |  | Знаковая |  | Беззнаковая |
| *A*пр. | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 |  | 67 |  | 67 |
| *B*доп. | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |  | -64 |  | 192 |
| *C*доп. | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |  |  |  | 131? |
| *C*пр. | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 |  | -125? |  |  |

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

**Задание 3:**

Значение числа *В* фиксируем *(В* = 46), 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* = 82.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *А* > 0, *B* < 0. | | | | | | | | | Интерпретации | | | |
|  |  |  |  |  |  |  |  |  |  | Знаковая |  | Беззнаковая |
| *A*пр. | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 |  | 82 |  | 82 |
| *B*доп. | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 |  | -46 |  | 209 |
| *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 | 0 | 1 | 1 | 1 | 0 |  | -82 |  | 174 |
| *B*пр. | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 |  | 46 |  | 46 |
| *C*. | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  | -128 |  | 128 |

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