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

**Домашняя работа №1**

по дисциплине “Дискретная математика”

вариант 51

Выполнил:

Мироненко Апртём Дмитриевич

группа P3131

Работу принял:

Поляков Владимир Иванович

Санкт-Петербург

~2023~

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

**Задание 1:**

А = 6710 = 010000112 , В = 4610 =001011102

А > 0, В > 0.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  |  |  | Знаковая |  | Беззнаковая |
| *А*пр. | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 |  | 67 |  | 67 |
| *B*пр. | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 |  | 46 |  | 46 |
| *С*пр. | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 |  | 113 |  | 113 |

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 | 0 | 0 | 1 | 1 |  | 67 |  | 67 |
| *B*доп. | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 |  | -46 |  | 209 |
| *С*пр. | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 |  | 21 |  | 21? |

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 258.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *А <* 0, *B >* 0. | | | | | | | | | Интерпретации | | | |
|  |  |  |  |  |  |  |  |  |  | Знаковая |  | Беззнаковая |
| *А*пр. | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 |  | -67 |  | 188 |
| *B*доп. | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 |  | 46 |  | 46 |
| *Сдоп*. | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 |  |  |  | 234 |
| *Cпр* | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 |  | -21 |  |  |

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 | 1 | 1 | 0 | 0 |  | | -67 |  | 188 |
| *B*доп. | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 |  | | -46 |  | 209 |
| *С*доп. | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 |  | |  |  | 142? |
| *С*пр. | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 |  | | -113 |  |  |

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

Для БзИ результат неверен вследствие возникающего переноса из старшего разряда. Вес этого переноса составляет 258.

**Задание 2:**

**! A + B > 128 🡪 127 > b > 128 – A! пусть В = 96**

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

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

*А*

7 0 7 0

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *А* > 0, *B* > 0. | | | | | | | | | | Интерпретации | | | |
|  |  |  |  |  |  |  |  |  |  | | Знаковая |  | Беззнаковая |
| *А*пр. | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 |  | | 67 |  | 67 |
| *B*пр. | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |  | | 96 |  | 96 |
| *С*доп. | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 |  | |  |  | 163 |
| *С*пр. | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 |  | | -113 |  |  |

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

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *А* < 0, *B* < 0. | | | | | | | | | | Интерпретации | | | |
|  |  |  |  |  |  |  |  |  |  | | Знаковая |  | Беззнаковая |
| *А*доп. | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 |  | | -67 |  | 188 |
| *B*доп. | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |  | | -96 |  | 160 |
| *С*пр. | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 |  | | 134? |  | 134 ? |

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

**Задание 3:** **Значение числа *В* фиксируем (*В* = 46), 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* = 82.**

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

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

*А*

7 0 7 0

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *А* > 0, *B* > 0. | | | | | | | Интерпретации | | | | | | |
|  |  |  |  |  |  |  | |  |  |  | Знаковая |  | Беззнаковая | |
| *А*пр. | 0 | 1 | 0 | 1 | 0 | 0 | | 1 | 0 |  | 82 |  | 82 | |
| *B*пр. | 0 | 0 | 1 | 0 | 1 | 1 | | 1 | 0 |  | 46 |  | 46 | |
| *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

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *А* < 0, *B* < 0. | | | | | | | | | Интерпретации | | | |
|  |  |  |  |  |  |  |  |  |  | Знаковая |  | Беззнаковая |
| *А*доп. | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 |  | -82 |  | 173 |
| *B*доп. | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 |  | -46 |  | 209 |
| *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