МИНИСТЕРСТВО НАУКИ И ВЫСШЕГО ОБРАЗОВАНИЯ РФ

федеральное государственное бюджетное образовательное учреждение высшего образования

**«Вологодский государственный университет»**

**Институт математики, естественных и компьютерных наук**

**Информатика и вычислительная техника**

**ОТЧЁТ ПО ЛАБОРАТОРНОЙ РАБОТЕ №7**

**«Командный цикл процессора»**

Дисциплина: «ЭВМ и периферийные устройства»

Направление подготовки: 09.03.01. Информатика и вычислительная техника

|  |  |
| --- | --- |
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| Дата сдачи |  |
| Дата защиты | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  *(подпись преподавателя)* |

Вологда

2022 г.

**Задание 1**

Код программы:

RD #8

WR R2

WR @R2+

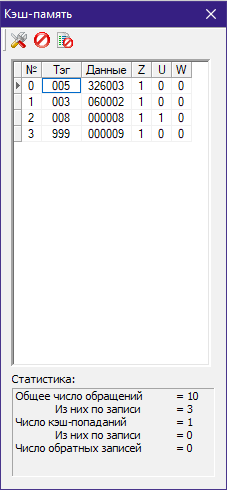
PUSH R2

POP R3

WR -@R3

CALL 003

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| PC | Мнемокод | № | Тэг | Данные | Z | U | W |
| 000 | RD #008 | 0 | 000 | 000000 | 0 | 0 | 0 |
|  |  | 1 | 000 | 000000 | 0 | 0 | 0 |
|  |  | 2 | 000 | 000000 | 0 | 0 | 0 |
|  |  | 3 | 000 | 000000 | 0 | 0 | 0 |
| 001 | WR R2 | 0 | 000 | 211008 | 1 | 1 | 0 |
|  |  | 1 | 000 | 000000 | 0 | 0 | 0 |
|  |  | 2 | 000 | 000000 | 0 | 0 | 0 |
|  |  | 3 | 000 | 000000 | 0 | 0 | 0 |
| 002 | WR @R2+ | 0 | 000 | 211008 | 1 | 1 | 0 |
|  |  | 1 | 001 | 320002 | 1 | 1 | 0 |
|  |  | 2 | 000 | 000000 | 0 | 0 | 0 |
|  |  | 3 | 000 | 000000 | 0 | 0 | 0 |
| 003 | PUSH R2 | 0 | 000 | 211008 | 1 | 0 | 0 |
|  |  | 1 | 001 | 320002 | 1 | 0 | 0 |
|  |  | 2 | 002 | 325002 | 1 | 0 | 0 |
|  |  | 3 | 008 | 000008 | 1 | 0 | 0 |
| 004 | POP R3 | 0 | 000 | 211008 | 1 | 0 | 0 |
|  |  | 1 | 003 | 060002 | 1 | 1 | 0 |
|  |  | 2 | 002 | 325002 | 1 | 0 | 0 |
|  |  | 3 | 999 | 000009 | 1 | 1 | 0 |
| 005 | WR -@R3 | 0 | 000 | 211008 | 1 | 0 | 0 |
|  |  | 1 | 003 | 060002 | 1 | 1 | 0 |
|  |  | 2 | 004 | 070003 | 1 | 1 | 0 |
|  |  | 3 | 999 | 000009 | 1 | 1 | 0 |
| 006 | CALL 003 | 0 | 005 | 326003 | 1 | 0 | 0 |
|  |  | 1 | 003 | 060002 | 1 | 0 | 0 |
|  |  | 2 | 008 | 000008 | 1 | 1 | 0 |
|  |  | 3 | 999 | 000009 | 1 | 0 | 0 |

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|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Мнемокод | № | Тэг | Данные | Z | U | W |
| 00 | MAR := PC | 0 | 000 | 000000 | 0 | 0 | 0 |
|  |  | 1 | 000 | 000000 | 0 | 0 | 0 |
|  |  | 2 | 000 | 000000 | 0 | 0 | 0 |
|  |  | 3 | 000 | 000000 | 0 | 0 | 0 |
| 01 | MRd | 0 | 000 | 211008 | 1 | 1 | 0 |
|  |  | 1 | 000 | 000000 | 0 | 0 | 0 |
|  |  | 2 | 000 | 000000 | 0 | 0 | 0 |
|  |  | 3 | 000 | 000000 | 0 | 0 | 0 |
| 02 | CR := MDR | 0 | 000 | 211008 | 1 | 1 | 0 |
|  |  | 1 | 001 | 320002 | 1 | 1 | 0 |
|  |  | 2 | 000 | 000000 | 0 | 0 | 0 |
|  |  | 3 | 000 | 000000 | 0 | 0 | 0 |
| 03 | PC := PC+1 | 0 | 000 | 211008 | 1 | 1 | 0 |
|  |  | 1 | 001 | 320002 | 1 | 1 | 0 |
|  |  | 2 | 000 | 000000 | 0 | 0 | 0 |
|  |  | 3 | 000 | 000000 | 0 | 0 | 0 |
| 04 | RAR := CR5 | 0 | 000 | 211008 | 1 | 1 | 0 |
|  |  | 1 | 001 | 320002 | 1 | 1 | 0 |
|  |  | 2 | 000 | 000000 | 0 | 0 | 0 |
|  |  | 3 | 000 | 000000 | 0 | 0 | 0 |
| 05 | RDR := Acc | 0 | 000 | 211008 | 1 | 1 | 0 |
|  |  | 1 | 001 | 320002 | 1 | 1 | 0 |
|  |  | 2 | 000 | 000000 | 0 | 0 | 0 |
|  |  | 3 | 000 | 000000 | 0 | 0 | 0 |
| 06 | RWr | 0 | 000 | 211008 | 1 | 1 | 0 |
|  |  | 1 | 001 | 320002 | 1 | 1 | 0 |
|  |  | 2 | 000 | 000000 | 0 | 0 | 0 |
|  |  | 3 | 000 | 000000 | 0 | 0 | 0 |
| 07 | END\_COMMAND | 0 | 000 | 211008 | 1 | 1 | 0 |
|  |  | 1 | 001 | 320002 | 1 | 1 | 0 |
|  |  | 2 | 000 | 000000 | 0 | 0 | 0 |
|  |  | 3 | 000 | 000000 | 0 | 0 | 0 |

**Задание 3**

RD #8

WR R2

WR @R2+

PUSH R2

POP R3

WR -@R3

CALL 003

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| PC | Мнемокод | № | Тэг | Данные | Z | U | W |
| 000 | RD #008 | 0 | 000 | 000000 | 0 | 0 | 0 |
|  |  | 1 | 000 | 000000 | 0 | 0 | 0 |
|  |  | 2 | 000 | 000000 | 0 | 0 | 0 |
|  |  | 3 | 000 | 000000 | 0 | 0 | 0 |
|  |  | 4 | 000 | 000000 | 0 | 0 | 0 |
|  |  | 5 | 000 | 000000 | 0 | 0 | 0 |
|  |  | 6 | 000 | 000000 | 0 | 0 | 0 |
|  |  | 7 | 000 | 000000 | 0 | 0 | 0 |
| 001 | WR R2 | 0 | 000 | 211008 | 1 | 1 | 0 |
|  |  | 1 | 000 | 000000 | 0 | 0 | 0 |
|  |  | 2 | 000 | 000000 | 0 | 0 | 0 |
|  |  | 3 | 000 | 000000 | 0 | 0 | 0 |
|  |  | 4 | 000 | 000000 | 0 | 0 | 0 |
|  |  | 5 | 000 | 000000 | 0 | 0 | 0 |
|  |  | 6 | 000 | 000000 | 0 | 0 | 0 |
|  |  | 7 | 000 | 000000 | 0 | 0 | 0 |
| 002 | WR @R2+ | 0 | 000 | 211008 | 1 | 1 | 0 |
|  |  | 1 | 001 | 320002 | 1 | 1 | 0 |
|  |  | 2 | 000 | 000000 | 0 | 0 | 0 |
|  |  | 3 | 000 | 000000 | 0 | 0 | 0 |
|  |  | 4 | 000 | 000000 | 0 | 0 | 0 |
|  |  | 5 | 000 | 000000 | 0 | 0 | 0 |
|  |  | 6 | 000 | 000000 | 0 | 0 | 0 |
|  |  | 7 | 000 | 000000 | 0 | 0 | 0 |
| 003 | PUSH R2 | 0 | 000 | 211008 | 1 | 1 | 0 |
|  |  | 1 | 001 | 320002 | 1 | 1 | 0 |
|  |  | 2 | 002 | 325002 | 1 | 1 | 0 |
|  |  | 3 | 008 | 000008 | 1 | 1 | 0 |
|  |  | 4 | 000 | 000000 | 0 | 0 | 0 |
|  |  | 5 | 000 | 000000 | 0 | 0 | 0 |
|  |  | 6 | 000 | 000000 | 0 | 0 | 0 |
|  |  | 7 | 000 | 000000 | 0 | 0 | 0 |
| 004 | POP R3 | 0 | 000 | 211008 | 1 | 1 | 0 |
|  |  | 1 | 001 | 320002 | 1 | 1 | 0 |
|  |  | 2 | 002 | 325002 | 1 | 1 | 0 |
|  |  | 3 | 008 | 000008 | 1 | 1 | 0 |
|  |  | 4 | 003 | 060002 | 1 | 1 | 0 |
|  |  | 5 | 999 | 000009 | 1 | 1 | 0 |
|  |  | 6 | 000 | 000000 | 0 | 0 | 0 |
|  |  | 7 | 000 | 000000 | 0 | 0 | 0 |
| 005 | WR -@R3 | 0 | 000 | 211008 | 1 | 1 | 0 |
|  |  | 1 | 001 | 320002 | 1 | 1 | 0 |
|  |  | 2 | 002 | 325002 | 1 | 1 | 0 |
|  |  | 3 | 008 | 000008 | 1 | 1 | 0 |
|  |  | 4 | 003 | 060002 | 1 | 1 | 0 |
|  |  | 5 | 999 | 000009 | 1 | 1 | 0 |
|  |  | 6 | 004 | 070003 | 1 | 1 | 0 |
|  |  | 7 | 000 | 000000 | 0 | 0 | 0 |
| 006 | CALL 003 | 0 | 000 | 211008 | 1 | 0 | 0 |
|  |  | 1 | 001 | 320002 | 1 | 0 | 0 |
|  |  | 2 | 002 | 325002 | 1 | 0 | 0 |
|  |  | 3 | 008 | 000008 | 1 | 1 | 1 |
|  |  | 4 | 003 | 060002 | 1 | 0 | 0 |
|  |  | 5 | 999 | 000009 | 1 | 0 | 0 |
|  |  | 6 | 004 | 070003 | 1 | 0 | 0 |
|  |  | 7 | 005 | 326003 | 1 | 0 | 0 |