|  |  |  |
| --- | --- | --- |
| ID | Last Name | First Name |
| 21321302 | Gu | siyi |

Variant C

**Theory part**

1. What is a processor pipeline?
2. Describe the machine cycles of ISZ instruction with DIRECT addressing using the simplest processor scheme given below.

Изображение выглядит как снимок экрана

Автоматически созданное описание

**Practice part**

1. Translate the given machine code in hexadecimal system into mnemonic code and fill the table below.

|  |  |  |
| --- | --- | --- |
| ADDRESS | MACHINE CODE | MNEMONIC CODE |
| 05A | F200\* | cla |
| 05B | 3072 | mov 072 |
| 05C | 4071 | add 071 |
| 05D | F800 | inc |
| 05E | 26FB | jsr 6fb |
| 05F | F800 | inc |
| 060 | 6072 | sub 072 |
| 061 | 3072 | mov 072 |
| 062 | F200 | cla |
| 063 | 4070 | add 070 |
| 064 | F900 | dec |
| 065 | 26FB | jsr 6fb |
| 066 | F900 |  |
| 067 | 6072 |  |
| 068 | 3072 |  |
| 069 | F200 |  |
| 06A | 406F |  |
| 06B | 26FB |  |
| 06C | 6072 |  |
| 06D | 3072 |  |
| 06E | F000 |  |
| 06F | 0004 |  |
| 070 | 0023 |  |
| 071 | F511 |  |
| 072 | 0000 |  |
|  |  |  |
| 6FB | 0000 |  |
| 6FC | 9701 |  |
| 6FD | 670B |  |
| 6FE | A700 |  |
| 6FF | C707 |  |
| 700 | 470B |  |
| 701 | 370A |  |
| 702 | F300 |  |
| 703 | F600 |  |
| 704 | 470A |  |
| 705 | 470C |  |
| 706 | CEFB |  |
| 707 | F200 |  |
| 708 | 470B |  |
| 709 | CEFB |  |
| 70A | 0000 |  |
| 70B | F94F |  |
| 70C | 0015 |  |

\* - entry point of the program

1. Draw the flow chart of the program.
2. Fill the table below with the content of the memory after the program execution. Please write also the number of the memory accesses for each memory cell.

|  |  |  |
| --- | --- | --- |
| ADDRESS | MACHINE CODE | NUMBER OF MEMORY ACCESSES |
| 05A |  |  |
| 05B |  |  |
| 05C |  |  |
| 05D |  |  |
| 05E |  |  |
| 05F |  |  |
| 060 |  |  |
| 061 |  |  |
| 062 |  |  |
| 063 |  |  |
| 064 |  |  |
| 065 |  |  |
| 066 |  |  |
| 067 |  |  |
| 068 |  |  |
| 069 |  |  |
| 06A |  |  |
| 06B |  |  |
| 06C |  |  |
| 06D |  |  |
| 06E |  |  |
| 06F |  |  |
| 070 |  |  |
| 071 |  |  |
| 072 |  |  |
|  |  |  |
| 6FB |  |  |
| 6FC |  |  |
| 6FD |  |  |
| 6FE |  |  |
| 6FF |  |  |
| 700 |  |  |
| 701 |  |  |
| 702 |  |  |
| 703 |  |  |
| 704 |  |  |
| 705 |  |  |
| 706 |  |  |
| 707 |  |  |
| 708 |  |  |
| 709 |  |  |
| 70A |  |  |
| 70B |  |  |
| 70C |  |  |