**CPU Architecture Diagram**

MainMemory

CU

Special purpose registers

Memory Address (MAR)

Memory Data (MDR)

Status Flags

Control Flags

Flags

ALU

General purpose registers

$R1

$R2

$R3

$R4

$R5

$R6

$R7

$R8

Instruction Register

Program counter (PC)

**Description –**

* Memory Layout

Total Memory is 64Kb.

As our addressing word size is 32 bits so Memory will be array of 16384 Rows.

Word Size: 32 Bits

|  |
| --- |
| Memory Address 16384 |
| : |
| : |
| : |
| Memory Address 12 |
| Memory Address 8 |
| Memory Address 4 |
| Memory Address 0 |

Boot Memory: 512 Bytes are allocated for Boot Memory. Therefore Memory from 0 to 128 will be allocated to Boot Memory

Data Memory:

Instruction Memory:

* General Purpose Registers- ($R1 to $R8)

Data type used- Array of Char Data-type. As each element of char is 8 bits and each element will be storing either 0 or 1. Data is stored in Bits in each register.

* Special Purpose Registers-

Program Counter:

Memory Data Register

Memory Instruction Register

Memory Address Regitsr

* + Flags – Data Type used – character variable
* Instruction type (Immediate Instruction)-

Size:

Opcode destination Immediate Address