**Lab #5 - Basic Instructions**

**Objectives**

Let's try to understand some of the basic instructions and learn how they work.

**Part #1 - Quiz Instructions**

Please answer all of the given questions.

**Q1) What does the instruction below do?**

mov eax, 0x4

1. Move 0x4 into EAX
2. Move EAX to Address 0x4
3. Multiply EAX by 0x4
4. Do nothing, this is an illegal operation

**Q2) What does the instruction below do?**

mov eax, ebx

1. Copy the value in EBX into EAX
2. Copy the value in EAX into EBX

**Q3) The instruction below copies the value in the address in ebx to eax.**

mov eax, [ebx]

1. True
2. False

**Q4) The instruction below copies the value in ebx+4 to eax.**

mov eax, [ebx+4]

1. True
2. False

**Q5) The instruction below copies the value at the address 0x400000 to eax.**

mov eax, [0x400000]

1. True
2. False

**Q6) What does the instruction below do?**

mov eax, [ebx+ecx+4]

1. Copies the value of ebx+ecx+4 to eax
2. Copies the value at the address ebx+ecx+4 to eax

**Q7) Match the instructions on the left with what they do on the right.**

| **Instruction** | **What it means** |
| --- | --- |
| **add eax, 0x2** | add 0x2 to eax |
| **add eax, ebx** | add the value 0x2 to the value in eax |
| **add eax, [ebx]** | add the value 0x40000 to eax |
| **add [eax],0x2** | add the value in ebx to eax |
| **add eax, [0x40000]** | add the value in the address at ebx to eax |
| **sub eax, 0x2** | add eax to ebx |
|  | add the value in eax to ebx |
|  | subtract 0x2 from the value in the address in eax |
|  | add the value 0x2 to the value in the address at eax |
|  | add the value in the address at 0x40000 to eax |
|  | subtract 0x2 from the value in eax |

**Q8) Match the instructions on the left with what they do on the right.**

| **Instruction** | **What it means** |
| --- | --- |
| **inc eax** | eax = eax + 1 |
| **inc [eax]** | [eax] = [eax] + 1 |
| **dec eax** | eax = eax - 1 |
| **dec [address]** | [address] = [address] - 1 |
|  | [address] = [address-1] |
|  | eax = [eax+1] |
|  |  |

**Q9) Match the instructions on the left with what they do on the right.**

| **Instruction** | **What it means** |
| --- | --- |
| **push eax** | add the value in eax onto the top of the stack |
| **pop ebx** | call the function found at the value in the given address |
| **call eax** | call the function found at the address in eax |
| **call address** | remove the value in eax to the top of the stack |
|  | call the function found at a given address |
|  | remove the value at the top of the stack into ebx |

**Part #2 – Please reflect on what you learned from this lab**