Name: Class:

**Task 1**

1. (a) Three types of computer code are given in the table below. For each type of code, state whether it is high-level language code, assembly code or machine code.

|  |  |
| --- | --- |
| **Code** | **Type of code** |
| INPUT Counter FOR i 🡨 Counter TO 0 STEP -1 DO  Counter 🡨 Counter -1 NEXT i |  |
| 0000001110000101 0000001110000110 0000000000100110 0000000000011011 0000000000100110 0000000001010001 0000000000000000 0000000000000001 |  |
| INP loop OUT  STA count  SUB one  STA count  BRP loop  HLP  one DAT 1 count DAT |  |

(b) A very common computer architecture and instruction set is the 8086 instruction set. Although it was developed for an Intel processor in 1978, it is the basis of the x86 CPU architecture which current Intel processors are based on.

Search for the ‘8086 instruction set’ or the ‘x86 instruction set’. Find at least three instructions that are available in the instruction set and explain what they do. One instruction has been given as an example.

Some websites that may help with researching the 8086 instruction set include:

* <https://jbwyatt.com/253/emu/8086_instruction_set.html>
* <https://en.wikipedia.org/wiki/X86_instruction_listings>
* <https://onlinelibrary.wiley.com/doi/pdf/10.1002/0471733520.app8>

|  |  |  |
| --- | --- | --- |
| **Instruction** | **Explanation** | **Example** |
| ADD REG, memory | Adds a memory location to the current value in a register. | ADD AL, 3  This instruction adds 3 to the current value of AL. This is the equivalent of: AL 🡨 AL + 3 |
|  |  |  |
|  |  |  |
|  |  |  |

**Task 2**

1. Below are three devices that use embedded systems. Complete the table below the pictures and state how these devices use embedded systems.

|  |  |
| --- | --- |
| C:\Users\Rob\Dropbox\PG Online\Artwork Stock Images\Shutterstock images\shutterstock_83924713 digital camera.jpg |  |
| A picture containing microwave, oven, indoor, monitor  Description automatically generated |  |
|  |  |

2. Research other embedded systems that are used today.

(a) List as many as you can below.

(b) Select one of the embedded systems you gave in part (a). Research the system then describe the function of the device along with any inputs, outputs, processing and storage required.