COMPUTER ARCHITECTURE
CS104.3

1. **What is meant by an instruction?**
   - Computer instructions are a set of machine language instructions that a particular processor understands and executes. A computer performs tasks based on the instruction provided.

2. **Instruction set architecture (ISA) is the part of the computer architecture related to?**

   - Instruction set architecture (ISA) is an abstract model of a computer that defines how the software controls the hardware. It specifies the supported instructions, data types, registers, memory management, and input/output features of a computer. It is the interface between the hardware and the software. A device that executes instructions described by an ISA, such as a CPU, is called an implementation.

3. **Instruction format contains of two parts. What are they?**

   - OP-code
   - Operand

4. **What are instructions stored?**
   - memory
5. **How are instruction stored?**
   - Instructions are stored in memory as binary data, which is represented by sequences of 0s and 1s.

6. **An instruction differs from another instruction by three main factors. What are they?**
   - Length of the op-code
   - Number of operands
   - Length of operands

7. **A computer that is used for simple numerical problems, uses 6 bits for an opcode and 12 bits for a memory address. What is the size of its instruction?**

> Size of instruction=number of opcode bits+ number of memory addresses bit
> =6+12= 18 bits

8. **A computer that is used for simple numerical problems, uses 6 bits for an opcode and 12 bits for a memory address. How many different instructions can it have?**

> $=2^{(\text{number of opcode bits})}$
>
> $2^6 = 64$

9. **Memory address of the instruction format contains of two parts. What are they?**
   - Source operand
   - Result operand