**Chapter 1**

*The fool thinks he is wise, but the wise man knows himself to be a fool.*

***—William Shakespeare***

1. What is **Alias**? When 2 python variables (identifiers) are refrencing the same object in memory we know those variables as Aliases.
2. What is the difference between **==** and **is** operators? The equal operator checks value equality. Therefore it returns true when the both 2 sides have the same value in them. But **is** is used to check the identity of two variables. It simply checks if the 2 variables are aliases and refrencing the same memory segment.
3. which parts each **variable consistes of** ? mainly it consistes of 3 parts. A name. A value and A type. (keep in mind that python is **dynamically typed**.)
4. What is **object mutability**? Object mutability simply expresses the fact that if an object supports changes and can we edit them after creation or not.
5. What **STR methods** which start with **is** return? They return boolean values.
6. What is the difference between **compiler** and **interpreter**? A **compiler** and an **interpreter** are both tools used to translate high-level programming languages into machine code, but they do so in different ways. A compiler translates the entire source code of a program into machine code before execution, creating an executable file that can be run later, which often results in faster execution time. In contrast, an interpreter translates the source code line-by-line at runtime, executing each line as it reads it, which can make debugging easier but often results in slower performance since it must interpret the code every time it runs. In summary, compilers produce a complete executable beforehand, while interpreters execute code on-the-fly.

**Chapter 2**

*The only true wisdom is in knowing you know nothing.*

**—Socrates**

1. What is the difference between Infix(binary) and Unary operators? Unary operators need just one operand in order to work properly. But binary or infix operators need at least two operand.
2. How different do / and // work in python? What are they used for? These 2 operators are used to perform division. / is the trudiv operator and it return the answer of division including the decimal part. // is the floordiv used to calculate only the integer part of the answer.
3. What is the difference of Logical and Bitwise operators? Logical operators work on the value of objects and compare the if needed. But in case of Bitwise operators the work happens on the underlying bits which constructed that particular object.
4. Explain the terms ‘Expression’ and ‘Statement’. Where are they used? Expressions support evaluation, so remember python evaluates an expression in order to find an answer. but statements are simply some procedures or guides for python to express how it must execute the program

**Chapter3**

*سرچشمه ی همه ی عیب های آدمی 2 چیز است. یکی بیکاری و دیگری اعتقاد به خرافات و دو فضیلت نیز بیشتر وجود ندارد یکی* ***کار*** *و دیگری* ***خِرَد***

**—** *لئو تولستوی*

1. What is Sequence in python? And How many Sequence type do we have? Sequence in python is simply collection of items which come one after another and might have order depending on its type. We have 2 sequence type in python flat and container.
2. What are the differences between Flat and Container sequence type in python? Flat sequence types are more compatible and also keep the raw object in their memory. Also all the items in a flat sequence must be of a same type. In contrast container squence type keeps the refrence of objects in its memory and not the object itself. And the items in a container could have different types.
3. What is In-place operation and How different are sort and sorted? In-place operation change the object they are invoked on and won’t make a new object ot that type. Sorted buil-in function works in-place but list.sort() will make a new list.
4. How can we invoke a function on every element present in a sequence? By using map and filter we can achieve that goal.
5. Compare Tuple and list , Which one is more efficient? Tuple uses less memory compared to list because it is immutable and its size wont change. But list always takes more space than its actual need for future possible inserts. On the other side tuple constructor returns a refrence of the given object. But list constructor builds a new one.