Task 1 Diff between procedural,declarative programming

Procedural programming :- *is a programming paradigm that uses a linear or top-down approach. It relies on procedures or subroutines to perform computations. Procedural programming is also known as* ***imperative programming.***

Declarative programming *:- is a method to abstract away the control flow for logic required for software to perform an action, and instead involves stating what the task or desired outcome is. Declarative programming is a high-level programming concept, which is the* ***opposite of imperative programming.***

Task3 how python handles big numbers (more than 14 bytes).

Python supports a "bignum" integer type which can work with arbitrarily large numbers. In Python 2.5+, this type is called long and is separate from the int type, but the interpreter will automatically use whichever is more appropriate

Task4 null pointer exception.

The Null Pointer Exception (NPE):- typically occurs when you declare a variable but did not create an object and assign it to the variable before trying to use the contents of the variable. So you have a reference to something that does not actually exist.

As

Int num;

Without creating object from it as

Num=new Integer(5);

You will get null pointer exception as without creating object it will be null because it doesn't point to anything

Task 5 ***languages wich is not case sensitive languages.***

In computers, case sensitivity defines whether uppercase and lowercase letters

Some programming languages are case-sensitive for their identifiers (C, C++, Java, C#, Verilog,[2] Ruby,[3] Python and Swift). Others are case-insensitive (i.e., not case-sensitive), such as ABAP, Ada, most BASICs (an exception being BBC BASIC), Fortran, SQL (for the syntax, and for some vendor implementations, e.g. Microsoft SQL Server, the data itself)[NB 2] and Pascal. There are also languages, such as Haskell, Prolog, and Go, in which the capitalisation of an identifier encodes information about its semantics. Some other programming languages have varying case sensitivity; in PHP, for example, variable names are case-sensitive but function names are not case-sensitive

Task6 Automatic garbage collection

*Garbage collection (GC) is a memory recovery feature built into programming languages such as **C#,python and Java**. A GC-enabled programming language includes one or more garbage collectors (GC engines) that automatically free up memory space that has been allocated to objects no longer needed by the program.*

*Primitive programming languages like **C and C++** do not have their garbage collection*

Task7 diff between heap and stack

1-Heap memory is used by all the parts of the application whereas stack memory is used only by one thread of execution.

2-Whenever an object is created, it's always stored in the Heap space and stack memory contains the reference to it. Stack memory only contains local primitive variables and reference variables to objects in heap space.

3-Objects stored in the heap are globally accessible whereas stack memory can't be accessed by other threads.

4-Memory management in stack is done in LIFO manner whereas it's more complex in Heap memory because it's used globally. Heap memory is divided into Young-Generation, Old-Generation etc,

Stack memory is short-lived whereas heap memory lives from the start till the end of application execution.

Stack memory size is very less when compared to Heap memory. Because of simplicity in memory allocation (LIFO), stack memory is very fast when compared to heap memory