~~Assignment~~ 1 Practice Question 1.

1. i Programming is the process of designing and building an executable computer program to accomplish a specific computing result.

ii A program is a collection of instructions that can be executed by a computer to perform a specific task.

iii Programming Language is a formal language comprising of set of instructions that produce various kinds of output.

2 Types of Programming Language ~~consists of the numeric codes for the operations that a particular computer can execute directly.~~ The

-Machine Language : ~~This is one level~~

A machine language consists of the numeric codes for the operations that a particular computer can execute directly. The codes are strings of 0's and 1's.

-Assembly Language : This is one level above machine language. It uses short mnemonic codes for instructions and allows the programmer to introduce names of blocks of memory that hold data.

-High-Level Language : These are languages written

in a form that is close to our human language, enabling programmers to just focus on the problem being solved.

3 Features of a Programming Language

- Simplicity
- Orthogonality
- Portability
- Expressivity
- Programming Environment
- Support for abstraction

⊕ Programming Methodologies

→ Procedural Programming: Problem is broken down into procedures, or blocks of code that perform one task each. All procedures taken together form the whole program. It is suitable only for small programs that have low level of complexity.

→ Object-Oriented Programming: Here the solution revolves around entities or objects that are part of problem. The solution deals with how to store data related to the entities, how the entites behave and how they interact with each other to give a cohesive solution.

→ Functional Programming: Here the problem, or the desired solution, is broken down into functional units. Each unit performs its own task and is self-sufficient. These units are then stitched together to form the

complete solution.

→ Step-by-step solution: To implement the modules, process flow of each module must be described in step by step fashion. The step by step solution can be developed using algorithms or pseudocodes.

→ Problem Definition: After gathering requirements and analyzing them, problem statement must be stated clearly. Problem definition should unambiguously state what problem or problems need to be solved.

→ Pseudocode: After the system is designed, it is handed over to the project manager for implementation. i.e Coding.

3 A proposal on the five major stages that are involved in developing an efficient program for Johnson LTD. In order for this program to be a success we need the following process

1 Defining the problem.
2 Planning the solution.
3 Coding the program.
4 Testing the program.
5 Documenting the program.

6 As the Head of programming development team of Otito IT solutions you need ~~the~~ ~~programming~~ to follow ~~the~~ ~~fol~~ necessary steps.

* Identify the problem.
- Identify the user
- Determine the target computer
- Determine your programming skill

7 Structured programming is a programming paradigm aimed at improving the clarity, quality and development time of a computer program by making extensive use of the structured control flow constructs of selection (if/then/else) and repetition (while and for), block structures, and subroutines.

8 Fundamental Objectives of Structured Programming

- Sequence: Simply do one instruction then the next and the next. Just do them in a given sequence or in the order listed. Most lines of code are this.
- Selection: This is where you select or choose between two or more flows. The choice is decided by asking some sort of question.
- Iteration: Also known as repetition, it allows some code (one to many lines) to be executed several

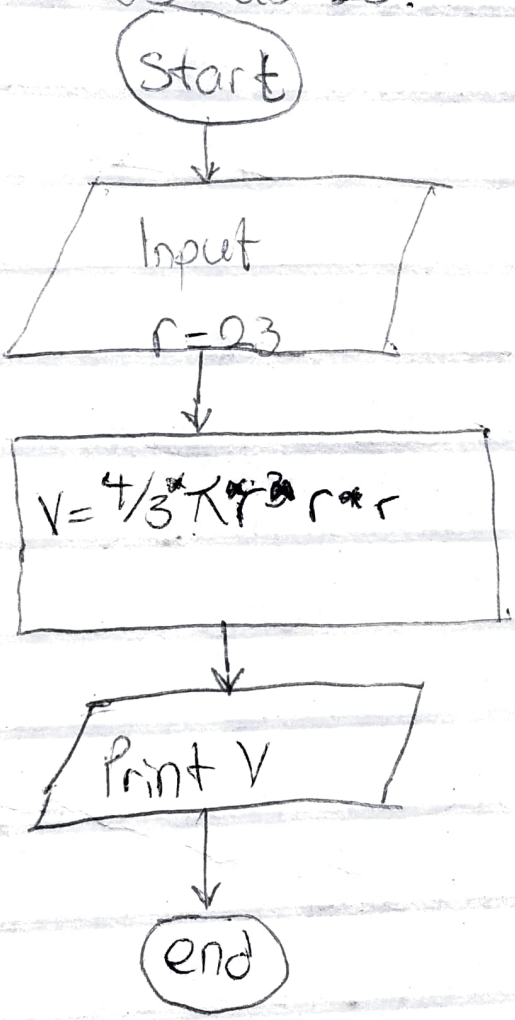
$V = \pi r^2 h/3$

$V = \pi r^2 1/3$

times.

- Branching: An uncontrolled structure that allows the flow of execution to jump to a different part of the program.

11 Flowchart to find the volume of a sphere given the radius as 23.



12 A Pseudocode to Find the Radius of a Cone.

Volume(V) = 200cm³, height(h) = 18

$V = \pi r^2 h/3 \Rightarrow V3 = \pi r^2 h \Rightarrow r^2 = V3/\pi h$

$\therefore r = \sqrt{3V/\pi h}$

1

Pseudocode

input V = 200,

input h = 18

~~Radius~~ r = sqt(3*V/π*h)

Print "The radius is", ~~radius~~ r.

13 Difference between oriented languages and structured oriented language ~~is that~~

Oriented Language	Structured Oriented Language
1 Follows Top Down approach	Follows Buttom up approach.
2 Program is divided into small part called functions	Program is divided into parts called objects.
3 Does not have any access specifier.	It has access specifiers named public, private, protected etc.
4 Does not have any proper way for hiding data so it is less secure.	It provides Data Hiding so provides more security.

14
```
1 //program to find the circumference of a circle
2 #include
3 #define
4 pi =3.142
```

```
5 int main()
6 {const float rad = 7.5;
7  float cir;
8  cir = 2*pi*rad;
9  printf("the value of circumference of a circle is %d",
   cir);
10 return 0;
```

-Line 1 - ~~This~~ "//" is a comment

-Line 3 - It allows the difinition of macros within your sour

-Lin~~e 4~~ ~~5~~ Assigning pi = 3.142.

-Line 5 - It returns some integer.

Line 6 - ~~is~~ or Making rad=7.5 a constant

Line 2 - Tells the preprocessor to insert the constant.

Line 7 - float

Line 8 - Assigning Cir = 2*pi*rad

Line 9 - Prints on the result

Line 10 - Exit status