Chapter 1: The Programming Process
Ref book: Programming Practices & Techniques (6th edition)

1. What is computer program?
Ans: A group of instructions for a computer that cause it to perform a desired task.

2. What do you know about programming process?
or, List the activities of the programming (or problem solving) process in order
Ans: The programming process is, therefore, a problem solving process. It consists of the following activities…
1. Defining a problem,
2. Preparing an algorithm
3. Preparing a program flowchart
4. Coding the program
5. Debugging and testing
6. Documenting

3. What things the programmers must carry out before proceeding one activity to the next?
Ans: Each activity has checking procedures that the programmer must carry out before proceeding to the next activity.

4. When does the programmer carry out documenting activities?
Ans: Documenting activities are carried out simultaneously with the other activities.

3. What is input?
Ans: The operation of reading data that is to be read and processed by a program.
   N.B: We can get input by two way…..I) from file II) by using Keyboard

4. What is output?
Ans: The result of processing by the computer; the process producing such result.

5. What role does a programmer play regarding computer program?
Ans:

6. Who is a Systems Analyst?
Ans: A system analyst is a person who plans the the collection of equipment, programs, people and, procedure that make up a system.

7. What do you mean by POSITIVE, NEGATIVE and ZERO numbers?
Ans:

8. What do you mean by Algorithm?
Ans: An algorithm is the description of the sequence of steps required to solve a problem.

9. What is a counter?
Ans: A counter is a device for keeping track of the number of times something Occur

10. What do you mean by an Execution-time-error?
Ans: An error, detected during the execution of a program that is of such a severe nature that execution can not be continued.

11. What do you know about Desk-checking an Algorithm?
Ans: Before proceeding to the next activity, the preparation of a program flowchart, we can check our algorithm by making up a list of numbers and seeing what happens when we attempt to process the list with our algorithm. this is called desk checking the algorithm.

12.What is a Flowchart? Why do we use it?
Ans: A flowchart is a symbolic representation of algorithm. In a flowchart, an algorithm is represented by a set of outlines which has been adopted as a standard by the ANSI.

13.What do you know about Program Flowcharting Outlines?
Ans: A representation using standard outlines of the processing steps to be used to solve a problem

14.What is compiler?
Ans: A compiler is used to translate each source program instruction into one or more object program instructions

15.What is assembling language?
Ans:

16.Where do we use terminal outlines?
Ans:

17.What do you mean by coding?
Ans: Coding means writing instructions for the computer to perform a desired task.

18.Name some programming language?
Ans: BASIC
            COBOL
            FORTAN
            PASCAL
            RPG II

20.What do you know about debagging and testing?
Ans: The programmer output must be carefully examined tom ensure that it is correct. if it is not, the source of the problem must be identified and corrected. The process of detecting and correcting errors is referred to as testing and debugging.

21.What is documenting?
Ans: Preparing a written record of all activities associated with the programming process.

22.What is detail line and total line?
Ans: Detail line: A printed line in a report that contains information about a single entity is called a detail line.

   Total line: A line that summarizes data obtained from one or more input records.

23.Define the followings –
 - **Logic Error**
 Ans: An error that occurs as a result of faulty reasoning; can not be detected by a translation program, but will produce incorrect result.

 - **Syntax Error**
 Ans: Violation of the rule of the particular programming language being Used.
 - **Source program**
 Ans: Instructions for the computer written in a form that is relatively easy for the programmer to work with; must be converted to machine language by a translation program before it can be run on it.

- **Object program**

Ans: The object will be in a binary form

- **ANSI**

Ans: American National Standards Institute

- **VDT**

Ans: Referred to as Visual Display Terminal.

- **CRT**

Ans: Cathode Ray tube

- **File**

Ans: A file is a collection of related records.

- **Record**

Ans: A record is a collection of fields. It is a component of a file containing information about a single entity.

- **Field**

Ans: A field is a subdivision of a record. A field is a collection of characters that is used to represent a unit of information about an entity.

- **Character**

Ans: A letter of the alphabet, a digit or a special character ($, %, +, etc.)

- **BASIC**

Ans: Beginner's All-Purpose Symbolic Instruction Code.
BASIC is widely used on personal computer

- **COBOL**

Ans: Common Business Oriented Language designed for business data processing requirements.

- **RPG II**

Ans: Report Program Generator. Powerful language for business application. Widely used on smaller business computers.

- **FORTRAN**

Ans: FORmula TRANslator.Designed for mathematical problem

- **Pascal**

Ans: A general purpose programming language

- **EOF**

Ans: End-of-file condition when reading file.

- **Loop**

Ans: A group of processing steps that is used repeatedly

- **High Level Language**

Ans: A programming language in which one source program instruction may be translated into one or more object program instructions is called a high-level language. Hi-level languages are most widely used as they are easy to learn. Programs written in a high-level language for one computer can easily be used on another computer with only minor modifications.

Chapter 2: Introduction to Structured Programming
Ref book: Programming Practices & Techniques (6th edition)

1. What do you mean by Structure Programming?
Ans: A collection of techniques for the planning and writing of programs that increase programmer's productivity e.g
 -Top down programming and the use of loop,
 -Selection,
 -Sequence structure

2. What is Modular Programming? How does it implement?
Ans: An early stage in the development of structured programming.
       A program is broken down into pieces, or modules which can be coded and
       tested separately.

3. What are sub routines?
Ans: A set of instructions for performing a particular task that can be called when needed.

4. What is an internal sub module?
Ans: An Internal sub modules is part of the program that uses it

5. What is External sub module?
Ans: A set of instructions for performing a particular task that can be used by any program because the instructions reside a library that is external to the using program.

6. What are the problems with the modular approach?
Ans: The modular programming approach initially met with some resistance from programmers because it restricted their activities. When positions of a program are allocated to different programmers no one program can be said to"own" the program; instead, it belong to a team.

7. What do you mean by top-down programming?
Ans: A technique for planning a structured program in which the entire program is first broken down into three modules:
     1.The processing that takes place before any data is processed
     2.The processing of data and
     3. The processing that takes place after all data records have been read.
These modules in turn are successively subdivided until each module performs single, limited functions.

8. What are structure charts?
Ans: The structured chart is a commonly used planning tool in top-down
        Programming
       -this tool is sometimes referred to as a hierarchy or hierarchical, chart, or
        a visual table of contents (VTOC).
       -there is no standard for structured chart & techniques
       -Rectangles are used to represent modules
       -Each module is assigned a number, with zero reserved for the main
        program module

9. What are dummy modules?
Ans: A record placed at the end of a file to signal that there is no more data to be processed.

10. What do you know about hierarchy chart?
Ans: Another name of structured chart; a tool for top down program planning.

11. What is a structure chart?
Ans: A tool to use in the top down planning of a structured program that shows the modules that comprise the program, and also shows the modules called by each modules.

12. What is GOTOless Programming?
Ans: Programming without the use of branch instructions.

13. What do you mean by loop structure?
Ans: one of the three fundamental programming structures;provides for the repletion of certain instructions as long as a condition is true.

14. What id Priming read?
Ans: Reading the first record in a file prior to entering a loop that is executed until EOF is detected.

15. What is not EOF?
Ans: Not End of file when reading a file.

16. What is the difference between flowchart & Structure chart?
Ans: A representation using standard outlines of the processing steps to be used to solve a problem.

17. What do you know about selection structure?
Ans: one of the three fundamental programming structures; provides the ability to choose between two alternative courses of action on the basis of whether a condition is true or false.

```
          IF condition-B THEN
                  Instruction-T
      ELSE
                  Instruction-F
          END IF
```

18. What do you know about "pseudo code"?
Ans: A way to represent instructions that uses ordinay English; a planning tool for structured programming.

19. What do you mean by "nested"?
Ans: Included within another,as…
　　A loop structure within another loop structure (nested loop)
　　A selection structure within another selection structure (nested IF)

20. What do you mean by main program module?
Ans: Each program contains a main program module which ultimately controls everything that happens.

21.Write down some loop structure?
Ans:

```
Do WHILE (condition-A)
      Instruction-1
      Instruction-2
      ……
END DO
```

```
FOR i=j to k by
      Instruction-1
      …..
END FOR
```

VTOC = Visual Table Of Contents
IOCS = Input Output Control System (A part of the operating system of a computer that handles the reading and writing of records.

Chapter 3: Conditions That Control Processing
Ref book: Programming Practices & Techniques (6th edition)

1. What do you mean by Boolean algebra? Mention the evaluating order of Boolean expression.
Ans: A form of algebra in which symbols have the values of either "true" or "false", and are subject to the operations AND,OR,NOT(also known as Boolean logic).

2. Define truth table. How can we develop a truth table by using AND, OR and NOT logic gate?
Ans:
Truth table:
   A tool for analyzing all possible combinations of values of a Boolean expression.
   A truth table is commonly used to represent the possible values of combinations of conditions.
Developing truth table:
   1.Set up a column for each condition.
   2.List all possible combinations of conditions, one combination to a row.
   3.Write expressions to be evaluated as a column heading;complex expressions may be subdivided into component parts for ease of evaluation, with each part of a column heading.
   4.Under each of these column heading, write the value of the expressions in the heading for the combination of conditions given for that row.

3. Construct a truth table for four rules.
Ans: 1.Set up a column for each condition.
   2. List all possible combinations of conditions, one combination to a row.
   3. Write expressions to be evaluated as a column heading;complex expressions may be subdivided into component parts for ease of evaluation, with each part of a column heading.
   4.Under each of these column heading, write the value of the expressions in the heading for the combination of conditions given for that row.

4. What do you mean by compound condition?
Ans: More than one condition combined by means of a Boolean operators AND or OR.

5. What do you mean by input editing checking?
Ans: Processing that cheques the validity of data.

6. Discuss about the sequence checking, restricted value test and miscellaneous other tests.
Ans:
 Sequence Checking:
   A method for verifying that a file is in order by comparing key fields of consecutive records.
Restricted value:
   A value applied to an input field to determine if its value is acceptable.
Miscellnious others test:
   Depending on the situation, any of a number of other test may be performed on input data.A field that is supposed to be numeric can be checked to determine if in fact it contains numeric characters.

7. What do you mean by EOF? Discuss sentinel value and counter.
Ans:
<u>EOF</u>
    End Of File condition when reading a file.

<u>Sentinel value:</u>
    A specific value placed in a field in a dummy record to signal the end of the file.
<u>Counter:</u>
    Counter is a device for keeping track of the number of times something occurs.

8. Mention possible alternative condition.
Ans:

9. What do you mean by swap? Write a pseudocode for shorting 3 numbers.
Ans:

Pseudocode for sorting 3 numbers:

```
IF A<B THEN
        Move A to B
        Move B to A
        Move temp to B
ELSE
        (null)
END IF
IF A<C THEN
        Move A to temp
        Move C to A
        Move TEMP to C
ELSE
        (null)
END IF
IF B<C THEN
        Move B to temp
        Move C to B
        Move TEMP to C
Else
        (null)
END IF
```

9. Discuss order of comparison.

Chapter 4: Complex Combinations Of Conditions
Ref book: Programming Practices & Techniques (6th edition)

1. How can we identify redundancy?
Ans: We can identify redundancy as follows:
> **1.** Look for two riles that have the same actions.
> **2.** Then if all condition entries but one are exactly the same, there is redundancy between two rules.

2. Why do we use decision table?
Ans: We use decision table to plan and document processing that involves complex combination of conditions.

3. How do you arrange conditions in term flowchart for getting optimize decision?
Ans:

4. What do you mean by the following term……?

- **Action entry** (Page No-79)
Ans: An action to be taken under a rule in a decision table.
> **-**The action entries **shows for each rule just what action will be taken**

- **Action stub** (Page No-79)
Ans: The list of actions in a decision table
> **-**The action stub **lists the possible actions in the order** that they will be taken.

- **Condition entry** (Page No-79**)**
Ans: -The condition entries consists of a series of rules

- **Condition stub** (Page No-79)
Ans: The **list of conditions** in a decision table.
> -The condition stub contains simple condition.
> -Conditions in the condition stub have an **AND** relationship.
> **-**To show an **OR** relationship we use **multiple rules**.

- **Redundancy** (Page No-79)
Ans: A situation in which **more than one rule of a decision table** may be applied for **a given combination of conditions.**

- **Contradiction** (Page No-80)
Ans: A situation in a decision table in which **the same combinations of conditions** lead to different actions.

- **Decision table**
Ans: A tool for planning and documenting processing that involves complex combination of conditions.

- **Program switch**
Ans: A field in memory, having the value of true or false that is used to record a condition.

- **Rule:**
Ans: A part of a decision table that indicates what actions are to be taken under a given combination of conditions.

- **Stub**
Ans: The portion of a decision table that lists all the conditions to be examined and the various possible actions to be taken.

Chapter 5: Control Breaks
Ref book: Programming Practices & Techniques (6th edition)

1. What is control break?
Ans: A change in the value in a control field between consecutive records in a file is called control break.

2. What is control field?
Ans: A field in output record that is used to sequence the file and that is checked to determine when a subtotal is to be printed.

3. How to handle control break?
Ans:

4. What is false control break?
Ans: A control break encountered when processing the first record in an ordered file -that does not actually reflect a change in the value in a control field.

5. What is handling line?
 Ans: Line printed at the top of the pages of a report.

 6. What do you know about Nassi-Sheiderman flowchart?
Ans: A compact and easily understood technique for planning and documenting structured programs: includes no provision for branches.

Chapter 6: Multilevel Control Breaks
Ref book: Programming Practices & Techniques (6th edition)

1. What do you mean by multilevel control? (page-107)
Ans: Refers to processing that produces more than one level of sub total, i.e., subtotals for grouping of records on more than one field.

2. What do you mean by group indication? (page-110)
Ans: The printing in a report of only those control field values that have changed since they were last printed

3. What do you mean by group printed? (page-110)
Ans: Refers to a report in which a line of data summarizes information from more than one record; a report without detail lines.

4. What do you mean by HIPO? (page-123)
Ans: HIPO stands for - **Hierarchical input-process-output.**
   -A technique for planning and documenting structured programs that utilizes
   a hierarchy chart, a description of the input & output for each module,and a
   Description in pseudo code of the processing steps for each module.

5. What do you mean by intermediate control field? (page-108)
Ans: A control field, other than the major or minor control field, present only when there are tree or more control field.

6. What do you mean by major & minor control field? (page-108)
Ans:
Major control field
   - The most significant field in the ordering of a file; the one that changes
     least Frequently.

Minor control field
   - The least significant field in the ordering of a file; the one that changes
     frequently.

7. What is stand for HIPO? (page-123)
Ans: HIPO stands for - **Hierarchical input-process-output.**

8. Write the advantage of HIPO? (page-124)
Ans:
   - HIPO chart provides more information.
   - The input and output for each module are clearly identified so that we
      can easily determine what modules call the module being examined.

9. Write the disadvantage of HIPO? (page-124)
Ans: The main disadvantages of HIPO is that
   - the documentation for a program gets to be rate bulky: their is a
      page for each module regardless of the actual size of the module.
   - HIPO charts are not as widely used as structured charts and
      pseudo code, but they are a required form of documentation in some
      computer installation.

Chapter 7: Tables
Ref book: Programming Practices & Techniques (6th edition)

1. What is table?
Ans: A collection of **homogenous data** items that facilitates processing.
   - A collection of items of the same types (Numeric, Alphabetic, records) and
    size (length).
   - Table can be used to **hold information**
   - To **store the results** of processing.

2. What is array?
Ans: The table known as an **array** in some language.

3. Define 80-20 rule. (page no-136)
Ans: It indicates that 80 percent of our searches will be satisfied by 20 percent of
    our table arguments.

4. What is paired table?
Ans: **-** Two tables with the same number of elements and some logical
    relationship are called **paired table.**
   - Argument table and function table are used together. When the proper
    entry in the argument table is found, the corresponding element of
    the function table is retrieved**.**

5. What is table lookup? (page no-136)
Ans: Searching a table is referred to as doing a table look up.

6. What is search argument? (page no-130)
Ans: The value that is compared with argument table entries.

7. What is Multidimensional Tables? (page no-147)
Ans: **-** A table that can be visualized as containing more than a single column.
   - A two dimensional table contains rows and columns.
   - A three dimensional table is a stack of two dimensional tables.

8. Define function and argument table?
Ans:
Function tables: (page no-130)
A table that contains values that are to be retrieved for use in processing.

Argument table: (page no-136)
A table that is searched called argument tables.

9. Write Drawback of sequence checking.
Ans: The search argument is **first compared** with **the last table argument** to
identify erroneous search arguments that would otherwise cause the search to
extend beyond that last valid argument entry.

10. Express sequential and binary search. (Page no-136,139)
Ans:
Sequential search: (page no-136)
A method for searching an argument table that examines the entries in the order in which they
appear in the table, starting with the first entry.

More information>>>
- The sequential search is the most commonly used **algorithm** for searching **an argument table**.
- The starts with the **first table argument** and takes each succeeding argument in turn until a match is found.
- The search argument is **first compared** with **the last table argument** to identify erroneous search arguments.
- If **table argument < search argument**.we must check the **next table argument.**
- If **table argument >= search argument.** The search is over.
- If **table argument = search argument.** The match was found.

Binary search: (page no-139)
A technique for searching an ordered argument table that is efficient for a large table.

More information>>>
　-the binary search is more efficient searching technique for **large tables**.
　-the argument table must be in either **ascending** or **descending** order.
　-binary searches are used mostly with **discrete tables**.

11. What is meant by direct table addressing?
Ans: A technique for accessing a function table (without searching an argument table) by deriving the position in the function table directly from the argument.

12. How many ways to get table data into memory?
Ans: We can get data into memory at two ways….
- Referencing table entries.
- Getting the tables into memory.

13. What do you mean by Discrete and Segmented table?
Ans:
Discrete table: (page no-136)
　　- An argument table
　　- each table represents a particular value that will be compared with a
　　　search argument in an attempt to find an exact match.

　Segmented table: (page no-130)
　　-　An argument table
　　-　The argument entry is the upper (for ascending table) or lower (for descending table) limit of a range of values.
　　-　Segmented table consisting of a series of ranges for each of which there is a corresponding function value.

14. Which table has most used in business applications?
Ans: Segmented table has most used in business application because….
　　- Segmented table consisting of a series of ranges for each of which there is a corresponding function value.

15. How many types of search can be apply in a discrete table?
Ans:　Two types of search can be apply in a discrete table
　　　I) Sequential search
　　　II) Binary search

16. Which is the more efficient technique of searching a large table?
Ans: The **binary search** is more efficient searching technique for **large tables**.

17. Write the formula to access into two-dimensional one-dimensionally. (page no-152)
Ans:
　　　$j = n(i-1) + K$
Where, j = Index of desired elements in one dimensional table
　　n = Number of elements in each module
　　I = Index of desired subtable
　　K = Index of desired element in subtable

18. What is the difference between one-dimensional and two-dimensional tables?
Ans:
one-dimensional table:
A table that can be visualized as containing more than a single column.

Two-dimensional table:
A two dimensional table contains rows and columns.

Chapter 8: Multifile Processing: Sequential Access
Ref book: Programming Practices & Techniques (6th edition)

1. What is the master file and transaction file? (page no-155)
Ans:
Master file: A relatively **permanent file** that contains information **used regularly**; a file that must be updated and maintained.
Example: The inventory file.

Transaction file:
- A file that is retained for only a short time.
- A relatively **temporary file** that contains information that is used to update or maintain a master file.

N.B: Master files and transaction files will be accessed **sequentially**.

2. What do you mean by sequential access and serial access? (page no-156)
Ans:
Sequential access: A special case of serial access in which the records in the file are in order on one or more fields.
More information>>>
- Sequential access is one form of serial access.
- The value in a field in each record is called **key field.**
- When the master and transaction files are **in sequence on the same key field**, the matching process is much **more efficient**.

Serial access: Processing records in a file by starting with the first record and taking each succeeding record in turn.

3. What is the key field?(page no-156)
Ans: The field or fields that are used to identify a record;

4. Why do we use a key field? (page no-156)
Ans: Key field used in
- **sorting a sequential file** and in
- **retrieving records** from a direct file**.**

5. What is the type of categorize in file-processing activities? Write the name of them?
Ans: File processing activities can be categorised as
- Maintaining
- Updating
- Referencing

6. What is the types of forms media we will use for sequential files or master files.
Ans: Two types of forms media we will use for sequential or master files….
- Magnetic tape &
- Magnetic disk.

More information>>>
- Magnetic tape is used today primarily as medium for
    I) backing up files that are stored on disc
    II) for long term storage of transaction data
    III) for transferring data &
    IV) Programs from one computer to another.
- Tape is strictly a **serial medium**.

-The computer is **unable to** go to directly to a **specific record stored on tape**.

7. Why do we check sequence from a master file?
Ans:

8. Why a unique key exists in a file?
Ans:

9. If unique key does not exists then what will happen.
Ans:

10.If unique key exists then what will happen.
Ans:

11.When the master record is updated?
Ans:

12.When the old master record is copied to the new master file.
Ans:

13.When the transaction record waiting to be processed?
Ans:

14.What do you mean by maintaining? (page no-156)
Ans: Maintaining refers to the activities that changes the number of records in a
      master file.
More information>>>
      -The most common maintenance activities are…
            I) **adding** &
            II) **Deleting** records from a **master file.**

15.What do you mean by updating? (page no-156)
 Ans: Changing the contents of records in a master file to keep it current without
 changing the number of records in the file.

16.What do you mean by referencing? (page no-156)
 Ans: Retrieving information from a file without altering its contents

Chapter 9: Multifile Processing: Direct Access
Ref book: Programming Practices & Techniques (6th edition)

1. Define cylinder, track, and sector. (page no-187)
Ans:

Cylinder: The collection of tracks of the same numbers on a disk i.e. the tracks that can be read from or written to with a single positioning of the accessing mechanism.

Track: One of a series of concentric rings on the surface of a magnetic disc on which data is recorded.

Sector:

2. What does mean by indexed file? (page no-187)

Ans: A file from which records may be retrieved directly by means of one or more indexes; can be accessed sequential as well.

3. What does mean by ISAM? (page no-187)

Ans: - means **Indexed Sequential Access Method**
        A means of organizing record on a direct access storage device that
        provides for both direct and sequential.

4. What does mean by IOCS? (page no-189)

Ans: A part of the operating system of a computer that handles the reading and writing of records

5. What does mean by updating an ISAM file? (page no-189)
Ans: To updating an **ISAM file**, the programmer must supply IOCS with the key of the record needed and then issue a read command.
- When the read command is executed, **IOCS** retrieves from the field the key that it uses as a search argument in searching the indexes and the prime data area.

6. What does mean by adding a record to an ISAM file? (page no-192)
Ans: The key of the record is moved to the record key field, and the command to write an additional record is given.IOCS will set the I/O switch to zero unless a record with that key already exists in the file; in that case the I/O switch is set to one.

More Information's >>>
   - Adding record to an **ISAM** file may be batch or online.
   - If batch is used Access may be **direct** or **sequential.** Normally used direct
     access.

7. What does mean by VSAM file? (page no-195)

Ans: A means of organizing records on a direct-access storage device that
        Provides for both direct and sequential access.
      - VSAM file is capable of handling both **fixed-length records** and **variable
        length-records**

        Fixed length-records: Records which require differing amount of storage
        is called fixed length-records.

Variable-length records: The records which may change in over time is called fixed-length records.

8. **What is random file?** (page no-200)

Ans: A file which records appear to be in particular order because the location of a record is determined by manipulations performed on the key of the record (hashing)

9. **What is hashing algorithm?** [page no-200(Para-04)]

Ans: The location or address at which a record is stored in a random file is determined by manipulations performed on the record.The manipulation are expressed as a **hashing algorithm**.

10. **What is index set?** (page no-197)

Ans: In a VSAM file, the index that contains the highest key in each control area; also includes any higher-level indexes that may be required.

11. **What is sequence set?** (page no-197)

Ans: in a VISAM file the lowest level index is called the **sequence set.**
It contains.......
1. The highest key in each control interval within the control area &
2. The starting location of each control interval.

12. **What is full index files?** (page No-199)

Ans: An index in order by record key that contains the key and location of every record in the file.
-The entry contains the record key and the address on the disk of the **record.**
N.B: The records do not need to be stored in sequence and the may be fixed variable in length.

More information's >>>

-The indes is orderd by record key.
-A fully indexed file needs no overflow area, nor does it needs to reserve free space to add records.

Creating a fully indexed file: (page no-199)
-Create fully indexed file may be in any order.
- As record is stored on the disk, an entry is made in the index to record to **both in the key** and **the location of the record.**
-When all records have been stored, the index is sorted.

Updating a fully indexed file: (page no-199)
-   A fully indexed file can be updated from **batch** or **online**
-   It can access both **directly** and **sequentially**

Spaced sequential search*:* [page no-199(para-04)]

In this search, every n^{th} entry in the index is examined. When an index key is found that is greater than the search key, a sequential search of the preceding (n-1) index entries is made.

Adding records to a fully indexed file: [page no-199(last para)]

- Records can be added to a fully indexed file simply by **extending the file**
- Extending file is the another example of **piggyback file.**

13. What is DASD?

Ans: - means **Direct-Access Storage Device.**
 - The most common example of DASD is **magnetic disc.**

14. What is master index?
Ans: In an ISAM file, the higest-level index.
 -An optional index that contains the highest key in each track of the
 cylinder index.

15. What is direct access?
Ans: The ability to retrive a specific record from a file without having to first
 read all preceding records.