#ASLI ENGINEERING

Understanding the Torrent File

SWIPE

BY

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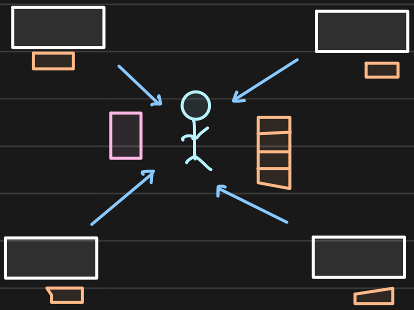
The Torrent File

The Torrent file is the session of transfer of a single content to the set of peers

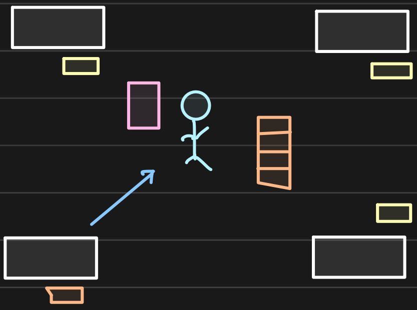


* Each torrent is independent

For a user to download anything from the network, it needs a Torrent file of the content.

Lifecycle of a torrent

Torrent is alive as long as there is at least one seeder



There is no incentive for anyone to join a torrent and become a seeder.

A user downloads the torrent file from wesites via normal HTTP req.

User user the torrent file and a client to download the file and upon completion, it can discard the torrent file.

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What torrent file holds?

The .torrent file holds meta information about the content, like

1. announce : the announce URL of tracker
2. created by : name and version of program who created it
3. creation date : creation time of torrent in UNIX epoch
4. encoding : encoding of strings as part of 'info' dictionary
5. comment : some additional comment about author / content
6. info : a dictionary that describes file(s) of the torrent
    1. single file format
        - name : filenome of content
        - length : file size in bytes
        - md5sum : md5 of the file
    2. multi-file format
        - name : name of the directory
        - files : list of dictionaries, one for each file
            - length : length of the file
            - md5sum : MD5sum of the file
            - path : list of string representing the path of the file

              /a/b/c.txt → [a, b, c.txt]

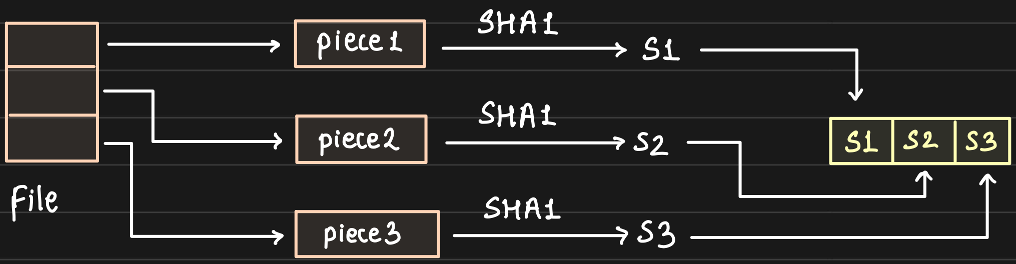
But where is the information about the file data?

It is also stored in the 'info' dictionary

The 'info' dictionary also contains

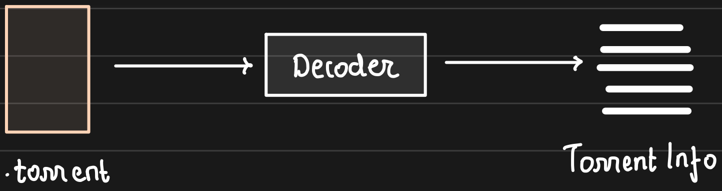
1 piece length : number of bytes in each piece

2. pieces : 20 byte SHA1 hash value concatenated



Torrent Fileformat - Bencoding

Torrent files are 'Bencoded' and to extract the above fields we would need to parse the torrent file (Bencoded)



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Bencoding Specification

Bencoding supports: strings, lists, integers, and dictionaries

1. Strings

Format. <length>:<string>

Example: arpit → 5:arpit

2 Integers

Format: i<integer>e

Example: 10 → i10e

3. list

Format: l<bencoded values>e

Example: ["a", "b", 1] → $l\ \underbrace{1:a}_{\text{bencoded String}}\ 1:b\ \underbrace{i1e}_{\text{bencoded integer}}\ e$

4. Dictionary

Format: d<bencoded string><bencoded value>...e

Example: { "a": 1 , "b": 2 } →

$d\underbrace{1:a}_{k}\underbrace{i1e}_{v}\underbrace{1:b}_{k}\underbrace{i2e}_{v}e$

k ↙ bencoded str   v ↘ bencoded value

* it is very fun to write your Bencoding parser