

Assignment 2

Q/A
10/04/2024

Q.1 Explain working of Direct Linking loader with example showing the entries in different databases built in `SDLLink`.

- ⇒ - Loader is the system program which is responsible for preparing the object program for execution and initiate the execution.
- The loader does the job of co-ordinating with the OS to get initial loading address for the .exe file and load it into memory.
- Function of Loader :-

1) Allocation

⇒ Allocates the space in the memory where the object program would be loaded for Execution.

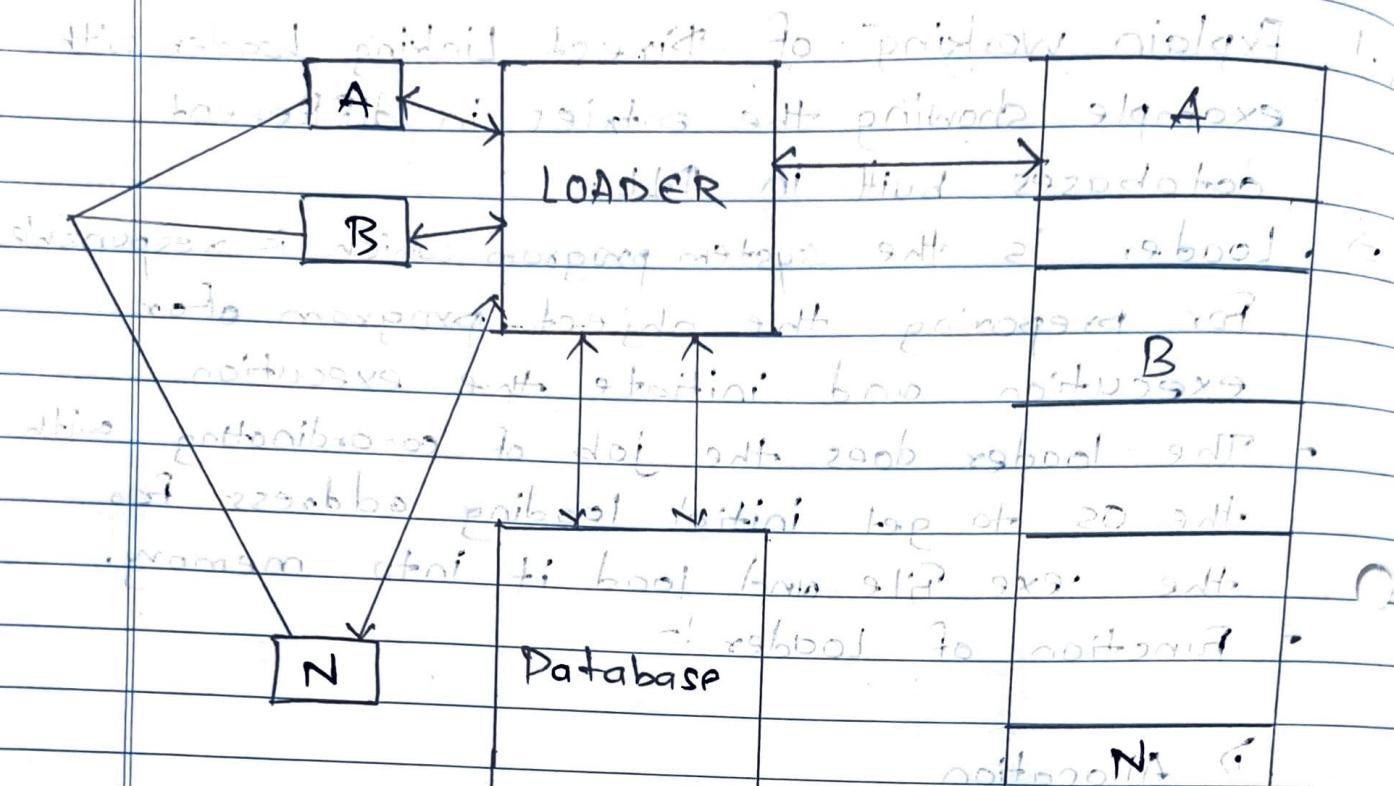
2) Linking

⇒ It links two or more object codes and provides the information needed to allow references between them.

3) Loading

⇒ It brings the object program into the memory for execution.

2. Dynamic Linking



→ Dynamic Linking Loader

⇒ Dynamic Linking Loader is a general re-linkable loader.

→ Allowing other programmers multiple procedures segments and multiple data segments and giving programmers complete freedom in referencing data or instruction contained in other segments.

→ The assembler must give the loader following information with each procedure or data segments.

→ Dynamic linked shared libraries are easier to create than static linked shared libraries.

- Now, let's consider the entries in different databases built in this DLL:

• Function Entry Points Database

→ This database contains the memory addresses of all the functions exported by DLL, such as add, subtract, multiply, and divide.

- Example Program for DLL

Source	Relative		Sample Program
1	0	LOOP1	START
2			ENTRY LOSTART0,
3			LOSTART1
4	8	LOSTART0	EXTRN L1START0,
5	12	LOSTART1	LOSTART1
6	16		DC B (LOSTART0)
7	20		DC B (LOSTART1 + 10)
8	24		DC B (LOSTART1 - LOSTART0 - 2)
9	28		DC B (L1START1)
10	32		DC B (L1START0 + L1START1 + 5)
11			END
12	0	L1START1	START
13			ENTRY L1START0
14			EXTRN LOSTART0, LOSTART1

Source Relative Address and Sample Program

15 4 LASTARTO

16 14 DC A(LOSTARTO)

17 18 DC A(LOSTARTO + 10)

18 22 DC A(LOSTARTO + 10) - 5

19 END

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DATA

DATA

DATA

DATA END

DATA

E

DATA

8

13

(DATA) 21 20

11

3

(DATA) 21 30

25

2

(DATA) 21 20

24

2

(DATA) 21 20

22

2

(DATA) 21 20

23

21

(DATA) 1

DATA

11

DATA

D

21

(DATA) 1

21

(DATA) 1

21