File IO Basic

“Variables in a persistent storage”

Prerequisite: Structure

Find more contents at
https://sites.google.com/view/cse105june18/home

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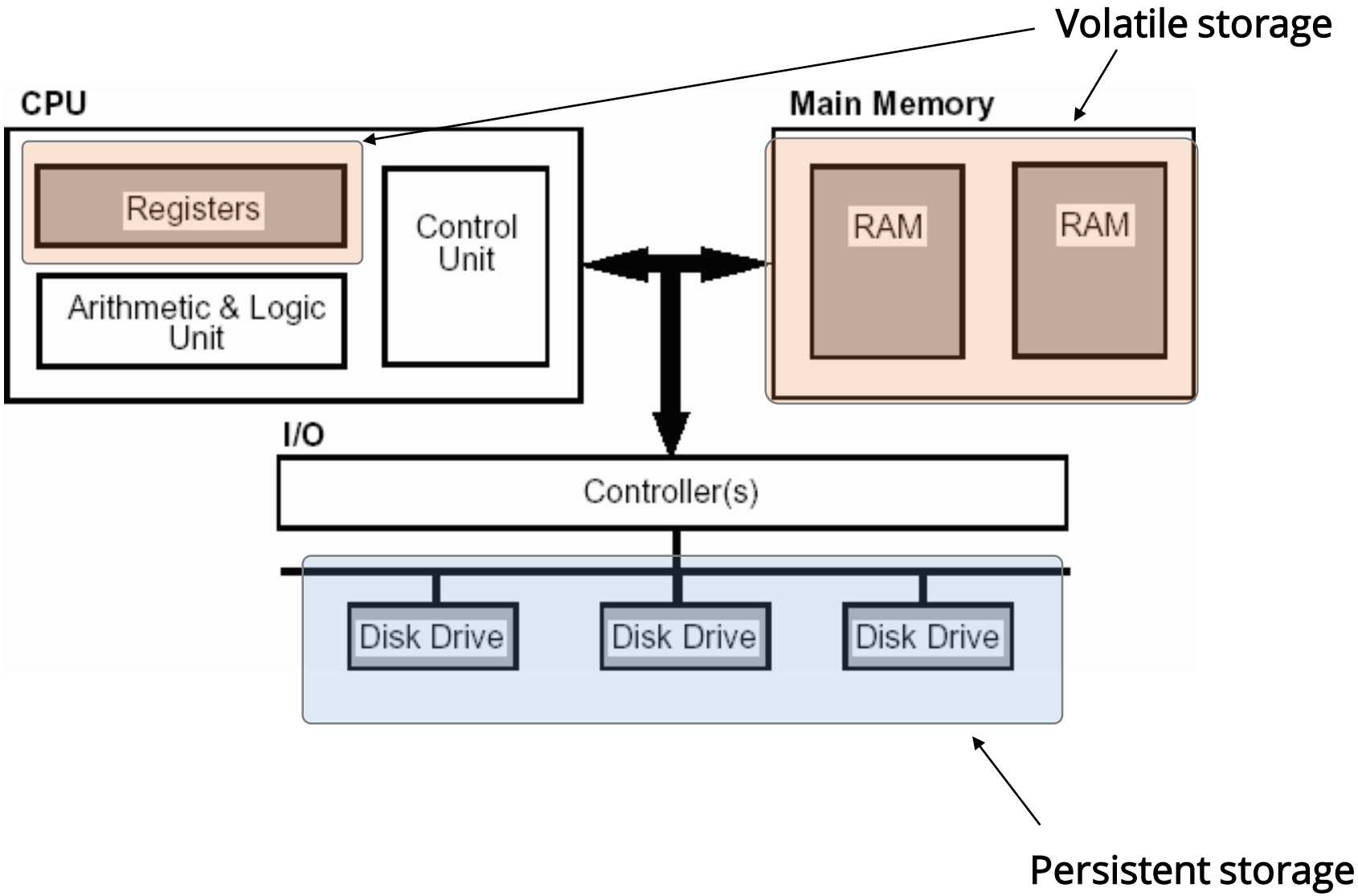
Two different types of memory



https://www.doc.ic.ac.uk/~eedwards/compsys/memory/index.html
https://www.ibm.com/developerworks/library/pa-dalign/index.html

Why files are needed?

- When a program is terminated, the entire data is lost. Storing in a file will preserve your data even if the program terminates.

- If you have to enter a large number of data, it will take a lot of time to enter them all. However, if you have a file containing all the data, you can easily access the contents of the file using few commands in C.

- You can easily move your data from one computer to another without any changes.

Two types of files

Text Files
(Human Readable)

Binary Files
(Only Machine Readable)

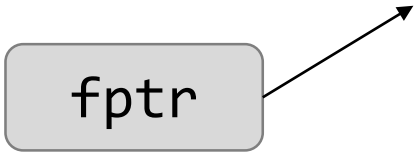
Supported File Operations

1. Creating a new file
2. Opening an existing file
3. Closing a file
4. Reading from and writing information to a file

Concept of writing in a File

Concept of writing in a File

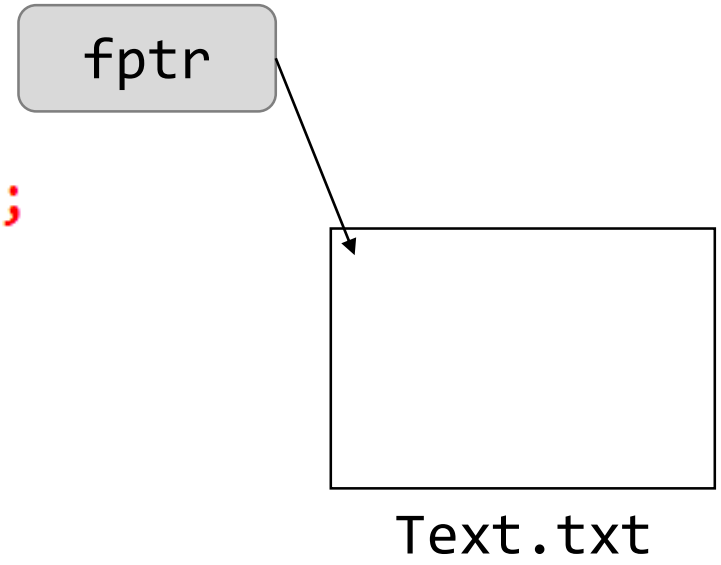
```
FILE * fptr;
```



Concept of writing in a File

```
FILE * fptr;

fptr = fopen("Text.txt", "w");
```



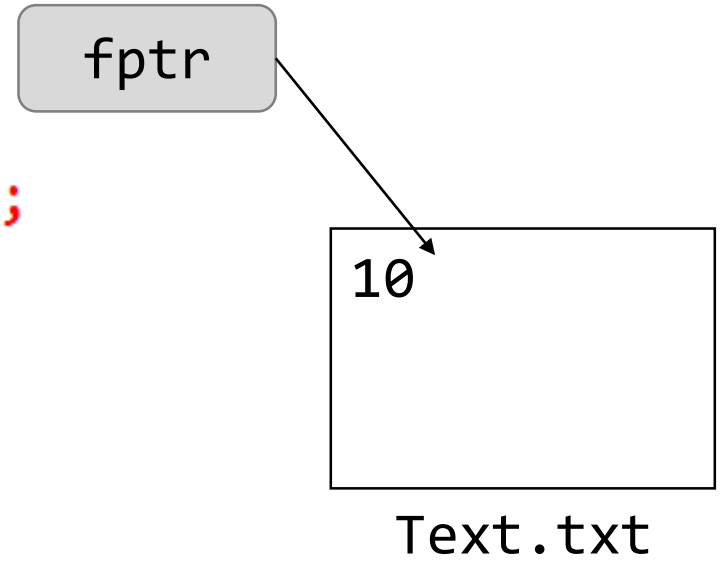
File Mode	Meaning of Mode	During Inexistence of File
w	Open for writing.	If the file does not exist, it will be created. If the file exists, its contents are overwritten.

Concept of writing in a File

```c
FILE * fptr;

fptr = fopen("Text.txt", "w");

int x = 10;
fprintf(fptr, "%d", x);
```



File Mode	Meaning of Mode	During Inexistence of File
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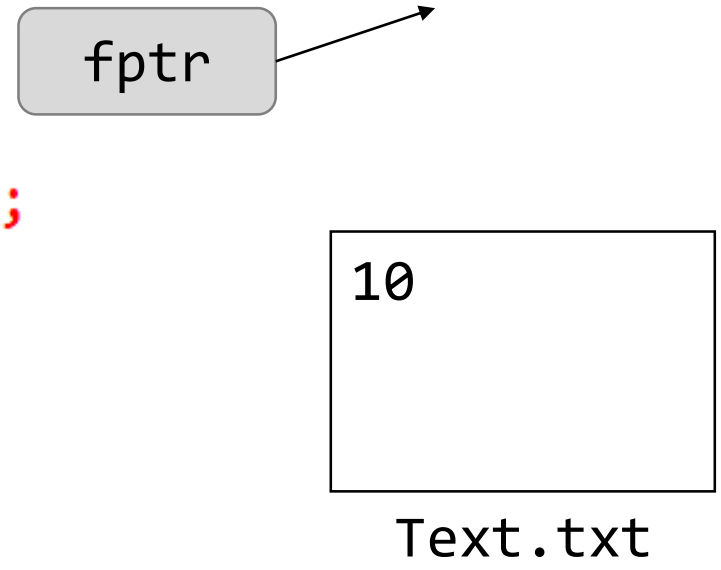
Concept of writing in a File

```c
FILE * fptr;

fptr = fopen("Text.txt", "w");

int x = 10;
fprintf(fptr, "%d", x);

fclose(fptr);
```



File Mode	Meaning of Mode	During Inexistence of File
w	Open for writing.	If the file does not exist, it will be created. If the file exists, its contents are overwritten.

Task 1

- Take an int and a float as user input
- Write it in a file

Task 2

- Take the name, roll and cgpa of a student as input
- Write it in a file

Reading from a file

```
FILE * fptr;

fptr = fopen("Text.txt", "r");

int y;
fscanf(fptr, "%d", &y);
printf("%d", y);

fclose(fptr);
```

File Mode	Meaning of Mode	During Inexistence of File
r	Open for reading.	If the file does not exist, fopen() returns NULL.

Task 3

- Display the information written in Task 2 in console

Append mode

```
fptr = fopen("Info.txt", "a");
```

File Mode	Meaning of Mode	During Inexistence of File
a	Open for append. i.e, Data is added to end of file.	If the file does not exists, it will be created.

Reading chars until end of file

```
char c = getc(fptr);
```

Displaying chars until end of file

```
FILE * fptr;
fptr = fopen("Info.txt", "r");

while (1)
{
    char c = getc(fptr);
    if (c == EOF)
        break;
    printf("%c", c);
}

fclose(fptr);
```

Reference

- Teach yourself C, Herb Schldt
- https://www.programiz.com/c-programming/c-file-input-output