VE482 Lab6

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1. Plugin based software development

2. Zathura plugin-txt

To learn more about the txt plugin, see `./ex2/README.md`.

To install zathura

```
yay -S zathura
```

To build the plugin

```
meson build
cd build
ninja
ninja install
```


To test the plugin

```
zathura $(txt_file_name)
```

Test result:

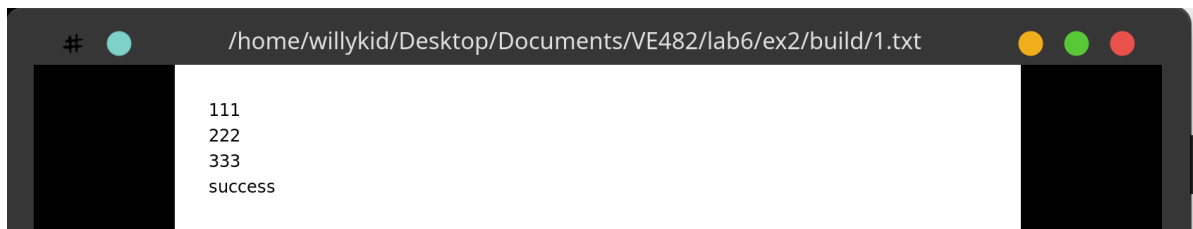Each time zathura reads a line, it prints "Hello" to stdout.

The text file is correctly displayed.

```
111
222
333
success
```

3. Design a plugin architecture

- `plugin-manager.h` : maintains a linked list that stores registered plugins

  ```c
  typedef int (*hook_t)(char *argv[]);

  typedef struct _Manager {
    Handle *first;
  } Manager;

  typedef struct _Handle {
    hook_t hook; // function that gets the job done
    char type[32]; // name of the file type (txt or csv)
    Handle *next;
  } Handle;
  ```

  - explanation:
    - `Manager` is a linked list structure that stores the first node to `Handle` .
    - `Handle` is used for the plugin to store its information.
    - The main function looks for `.so` plugin file in the `./plugins` directory. If found, the main function obtains a "handle", or the address of the function "init_plugin", through which the plugin registers itself by adding a node "Handle" to the Manager of main.
    - The "hook" is a function pointer that gets the job done. In this case, the "hook" function is "ui_cmd" that reads the file and sorts it.
- The code can handle 2 file types: txt or csv. To learn more, see `./ex3/README.md` .