

Creating and using libraries

Computing Laboratory

`http://www.isical.ac.in/~dfslab`

Types of libraries

- Static libraries (`.a` for *archive*): library becomes part of the executable
- Dynamically linked shared object libraries (`.so` for *shared object*): library is not included in the executable, but functions are called as needed at runtime

Creating / using static libraries

- Compiling: `gcc -c abc1.c abc2.c`
- Creating the library: `ar c libabc.a abc1.o abc2.o`
 - Other options (see man page for more details):
 - c: *create*
 - q: *quick* (append)
 - r: *replace*
 - u: *update*
 - v: *verbose*
 - t: *list*
- Using the library:
`gcc -o prog prog.c libabc.a`
or
`gcc -o prog prog.c -L/path/to/library-directory -labc`

Creating shared object libraries

- Compiling: `gcc -Wall -fPIC -c *.c`
position independent code
- Creating the library: `gcc -shared -Wl,-soname,libabc.so -o libabc.so *.o`
these options are passed to the linker
- Using the library:
`gcc -o prog prog.c -L/path/to/library-directory -labc`

Compiler flags

- **-I**: specify additional directories to search for header files
- **-L**: specify additional directories to search for library files

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Environment variables

- `export C_INCLUDE_PATH=/path/to/header-files`
- `export LD_LIBRARY_PATH=$LD_LIBRARY_PATH:/path/to/lib`

- `http://www.yolinux.com/TUTORIALS/
LibraryArchives-StaticAndDynamic.html`