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Section:

BSCS-9A

Assignment no 4:

Build Automation (Pre-Processors)

Submitted to:

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Task 3: Converting to Library
Static Library:


```cpp
// my_header_lib.cpp
nclude "my_header_file.hpp"

id MyClass::myFunction(int x)
    if (x % 2 == 0) {
        std::cout << "even" << s
    } else {
        std::cout << "odd" << st
    }
```

```cpp
// my_header_file.hpp
#ifndef MY_HEADER_FILE_HPP
#define MY_HEADER_FILE_HPP

#include <iostream>

class MyClass {
public:
    void myFunction(int x);
};

#endif
```

```cpp
// my_header_file.hpp
#ifndef MY_HEADER_FILE_HPP
#define MY_HEADER_FILE_HPP

#include <iostream>

class MyClass {
public:
    void myFunction(int x);
};

#endif
```

```
(base) dawood@chattha:~/Documents/Advance Programming/Assignment 4/Task3/q1$ g++ -c main.cpp -o main.o
(base) dawood@chattha:~/Documents/Advance Programming/Assignment 4/Task3/q1$ g++ -c my_header_lib.cpp -o my_header_lib.o
(base) dawood@chattha:~/Documents/Advance Programming/Assignment 4/Task3/q1$ ar -cvr libMyHeaderLib.a my_header_lib.o
a - my_header_lib.o
(base) dawood@chattha:~/Documents/Advance Programming/Assignment 4/Task3/q1$
```
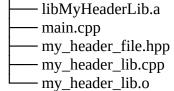
Dynamic Library:


```cpp
// my_header_lib.cpp
#include "my_header_file.hpp"

void MyClass::myFunction(int x)
    if (x % 2 == 0) {
        std::cout << "even" <<
    } else {
        std::cout << "odd" << s
    }
}
```

```cpp
// my_header_file.hpp
#ifndef MY_HEADER_FILE_HPP
#define MY_HEADER_FILE_HPP

#include <iostream>

class MyClass {
public:
    void myFunction(int x);
};

#endif // MY_HEADER_FILE_HPP
```

```cpp
// my_header_file.hpp
#ifndef MY_HEADER_FILE_HPP
#define MY_HEADER_FILE_HPP

#include <iostream>

class MyClass {
public:
    void myFunction(int x);
};

#endif // MY_HEADER_FILE_HPP
```

```
(base) dawood@chattha:~/Documents/Advance Programming/Assignment 4/Task3/Dynamic Library$ gcc -shared -Wl,-soname,libMyHeaderLib.so.1 -o libMyHeaderLib.so.1.0
(base) dawood@chattha:~/Documents/Advance Programming/Assignment 4/Task3/Dynamic Library$ ln -sf libMyHéqderLib.so.1.0 libMyHeaderLib.so.1
(base) dawood@chattha:~/Documents/Advance Programming/Assignment 4/Task3/Dynamic Library$ ln -sf libMyHeaderLib.so.1.0 libMyHeaderLib.so
(base) dawood@chattha:~/Documents/Advance Programming/Assignment 4/Task3/Dynamic Library$ LD_LIBRARY_PATH="./libMyHeaderLib.so"
```
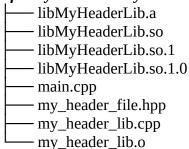
1. What is the directory structure of your code before and after the library creation.

Before library creation:
```
├── main.cpp
├── my_header_file.hpp
└── my_header_lib.cpp
```

After library creation:
```
├── libMyHeaderLib.a
├── main.cpp
├── my_header_file.hpp
├── my_header_lib.cpp
└── my_header_lib.o
```

After dynamic library creation:
```
├── libMyHeaderLib.a
├── libMyHeaderLib.so
├── libMyHeaderLib.so.1
├── libMyHeaderLib.so.1.0
├── main.cpp
├── my_header_file.hpp
├── my_header_lib.cpp
└── my_header_lib.o
```

2. What are the CVR arguments?
CVR Arguments:

● C: Create a new archive.
● V: Verbosely list files processed.
● R: Replace or insert files into the archive.

3. Run the commands below and report their output:

1. readelf -S my_header_lib.o
Lists the section headers of the object file.

2. readelf -S your_final_file
Lists the section headers of the final executable.