

HW4

ENV: buildpack-deps:latest on docker

Compare size

shell code:

```
gcc -static -o hello_static -s hello.c /usr/lib/aarch64-linux-gnu/libc.a
echo "hello_static size:"
size hello_static

gcc -o hello_dynamic hello.c
echo "hello_dynamic size:"
size hello_dynamic
```

Result:

```
hello_static size:
  text    data    bss      dec     hex filename
512226  22808  21840  556874  87f4a hello_static
hello_dynamic size:
  text    data    bss      dec     hex filename
 1606     624      8    2238    8be hello_dynamic
```

Static link

Shell code:

```
gcc -c sayhello.c
ar rcs libfoo.a sayhello.o
gcc -static -o hello-s main.c -L. libfoo.a

echo "hello-s size:"
size hello-s

echo "libfoo.a size:"
size libfoo.a
```

Result:

```
hello-s size:
  text    data    bss      dec     hex filename
```

```

512650  22776  21840  557266  880d2 hello-s
libfoo.a size:
  text    data    bss    dec    hex filename
   173      0      0    173    ad sayhello.o (ex libfoo.a)

```

Dynamic link

Shell code:

```

export LD_LIBRARY_PATH=.
gcc -fPIC -c sayhello.c
gcc -shared sayhello.o -o libmylib.so
gcc -o hello-d main.c libmylib.so

echo "hello-d size:"
size hello-d

echo "libmylib.so size:"
size libmylib.so

```

Result:

```

hello-d size:
  text    data    bss    dec    hex filename
  1597    640      8   2245   8c5 hello-d
libmylib.so size:
  text    data    bss    dec    hex filename
  1448    568      8   2024   7e8 libmylib.so

```

Bonus

I add a new lib saygoodbye.c

```

#include <stdio.h>

void saygoodbye(void)
{
    printf("\033[1;32m");
    printf("static-linking library routine: Goodbye!\n");
    printf("\033[0m");
}

```

And change main.c

```
int main(void)
{
    sayhello();
    saygoodbye();
    return(0);
}
```

Change shell to

```
gcc -c sayhello.c
gcc -c saygoodbye.c
ar rcs libfoo1.a sayhello.o
ar rcs libfoo2.a saygoodbye.o
gcc -static -o hello-s main.c -L. libfoo1.a libfoo2.a

echo "hello-s size:"
size hello-s

echo "libfoo1.a size:"
size libfoo1.a

echo "libfoo2.a size:"
size libfoo2.a
```

Result:

```
hello-s size:
  text    data    bss    dec    hex filename
512746  22776  21840  557362  88132 hello-s
libfoo1.a size:
  text    data    bss    dec    hex filename
   173      0      0    173    ad sayhello.o (ex libfoo1.a)
libfoo2.a size:
  text    data    bss    dec    hex filename
   173      0      0    173    ad saygoodbye.o (ex libfoo2.a)
```