

ForNextDay(18)
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strinlisttest.c

```
#include"StringList.h"
#include"Strings.h"
#include<stdlib.h>
#include<stdio.h>

int main(int argc, char** argv)
{
    StringList* sl = mallocStringList(argc);
    printf("Original\n");
    for(int i=0; i < argc; i++)
    {
        printf("%s\n", argv[i]);
        setElementStringList(sl,argv[i],i);
    }

    StringList* slDup;

    slDup = duplicateStringList(sl);
    printf("Duplicate\n");
    for(int i=0; i < argc; i++)
        printf("%s\n", getElementStringList(sl,i));

    return 0;
}
```

output

```
~/Documents/courses/cs2263/lecture/lecture18/L18src $ ./test test1
Original
./test
test1
test2
test3
Duplicate
./test
test1
test2
test3
```

StringList.c

```
StringList* mallocStringList(int iNElements)
{
    StringList* pSLThis = (StringList*)malloc(sizeof(StringList));
    pSLThis->Slist = (String*)malloc(iNElements * sizeof(String));
    pSLThis->length = iNElements;
    for (int i = 0; i < pSLThis->length; i++) {
        pSLThis->Slist[i] = (String)NULL;
    }

    return pSLThis;
}

void freeStringList(StringList* pSLThis)
{
    for (int i = 0; i < pSLThis->length; i++) {
        free(pSLThis->Slist[i]);
    }
    free(pSLThis);
}

int setElementStringList(StringList* pSLThis, String sThis, int index)
{
    // How do we tell if the element previously held a String?
    if (pSLThis->Slist[index] != (String)NULL) {
        freeString(pSLThis->Slist[index]);
    }
    String s = duplicateString(sThis);
    if (s == (String)NULL)
```

```
    return -1;
    pSLThis->Slist[index] = s;
    return index;
}
```

```
String getElementStringList(StringList* pSLThis, int index)
{
    if (pSLThis->Slist[index] == (String)NULL)
        return (String)NULL;
    return duplicateString(pSLThis->Slist[index]);
}
```

```
StringList* duplicateStringList(StringList* pSLThis)
{
    StringList* pSLThat = mallocStringList(pSLThis->length);
    if (pSLThat == (StringList*)NULL)
        return pSLThat;
    for (int i = 0; i < pSLThis->length; i++) {
        String str = getElementStringList(pSLThis, i);
        int index = setElementStringList(pSLThat, str, i);
        if (index == -1) {
            freeStringList(pSLThat);
            return (StringList*)NULL;
        }
    }
    return pSLThat;
}
```