

레포트

자료구조<과제>

-List 클래스 작성-

소프트웨어학부

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강대겸

1. 소스코드(main.cpp)

```
#include<iostream>
#include"String.h"
#include<stdio.h>

using namespace std;

int main() {
    bool x1, x2;
    String a((char*)"hello", 5);
    String b((char*)"world", 5);
    String c = a;
    a.Concat(b);
    a.print();
    x1 = (a == c);
    cout << x1 << " : a == c " << endl;
    c = b.Substr(0, 3);
    c.print();
    cout << " : b의 0~3까지 추출 값." << endl;
    cout << a.Length() << " : a의 길이" << endl;
    String f((char*)"ld", 2);
    cout << "b에서 ld의 시작 위치" << b.Find(f) << endl;
    return 0;
}
```

2. 소스코드(String.cpp)

```
#include"String.h"
#include<stdio.h>

using namespace std;

String::String() : String(10) {
}

String::String(String& s) : String(s.length + 1) {
    for (int i = 0; i < s.length; i++)
        buffer[i] = s.buffer[i];
    buffer[s.length] = '\0';
    length = s.length;
}

String::String(int m) {
    size = m;
    buffer = new char[m];
    length = 0;
}

String::String(char* init, int m) : String(m + 1) {
```

```

        for (int i = 0; i < m; i++)
            buffer[i] = init[i];
        buffer[m] = '\0';
        length = m;
    }
    String::~~String() {
        delete[] buffer;
    }
    String String::Concat(String t) {
        String result(this->length + t.length + 1);
        for (int i = 0; i < length; i++)
            result.buffer[i] = buffer[i];
        for (int i = 0; i < t.length; i++)
            result.buffer[length + i] = t.buffer[i];
        result.buffer[length + t.length] = '\0';
        result.length = length + t.length;

        return result;
    }
    String& String::operator=(const String& s) {
        delete[] buffer;
        buffer = new char[s.length + 1];
        for (int i = 0; i < s.length; i++)
            buffer[i] = s.buffer[i];
        buffer[s.length] = '\0';
        length = s.length;
        return *this;
    }
    bool String::operator==(String t) {
        for (int i = 0; i < length; i++) {
            if (buffer[i] != t.buffer[i])
                return false;
        }
        return true;
    }
    bool String::operator!() {
        if (length == 0)
            return true;
        else
            return false;
    }
    int String::Length() {
        return length;
    }
    String String::Substr(int i, int j) {

```

```

        String a(j - i + 2);
        a.length = (j - i + 2);
        for (int k = 0; k <= (j - i + 1); k++)
            a.buffer[k] = buffer[k + i];
        a.buffer[j - i + 1] = '\0';
        return a;
    }
    int String::Find(String p) {
        for (int i = 0; i <= Length() - p.Length(); i++) {
            for (int j = 0; j < p.Length() && buffer[i + j] == p.buffer[j]; j++)
                if (j == p.Length() - 1)
                    return i;
        }
        return -1;
    }
    void String::print() {
        for (int i = 0; i < length; i++)
            printf("%c", buffer[i]);
    }
}

```

3. 헤더파일(String.h)

```

#pragma once
class String {
private :
    char *buffer;
    int length;
    int size;

public:
    String();
    String(int m);
    String(String&);
    String(char* init, int m);
    ~String();
    String& operator=(const String&);
    bool operator==(String t);
    bool operator!=(String t);
    int Length();
    String Concat(String t);
    String Substr(int i, int j);
    int Find(String p);
    void print();
};

```

2. 실행화면



The screenshot shows the 'Microsoft Visual Studio 디버그 콘솔' (Debug Console) window. The output text is as follows:

```
hello1 : a == c  
worl : b의 0~3까지 추출 값.  
5 : a의 길이  
b에서 1d의 시작 위치3  
  
C:\Users\82102\source\repos\String\Debug\String.exe(프로세스 13960개)이(가) 종료되었습니다(코드: 0개).  
이 창을 닫으려면 아무 키나 누르세요...
```