한국외국어대학교
HANKUK UNIVERSITY OF FOREIGN STUDIES

Introduction to Computers & Lab

Lab 11

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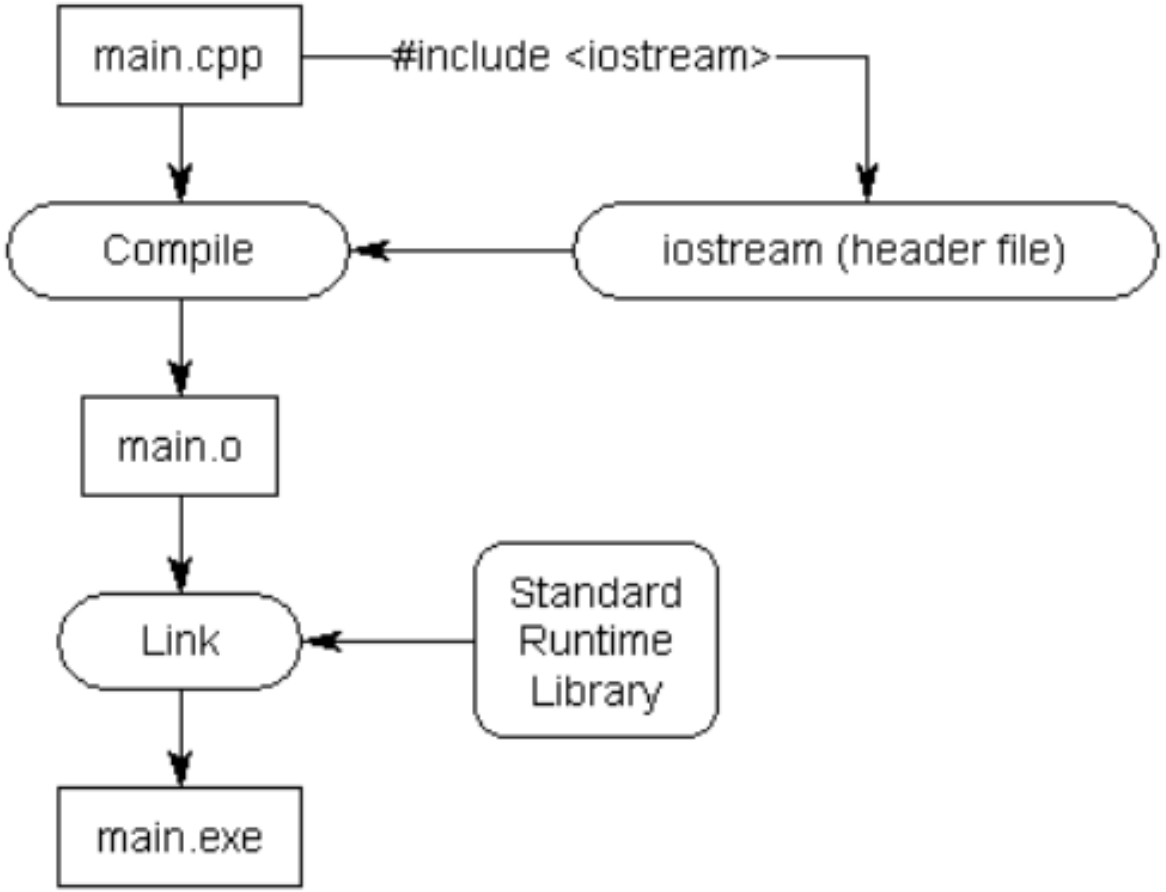
Header file


main.cpp
#include <iostream>
Compile
iostream (header file)
main.o
Link
Standard
Runtime
Library
main.exe

#include <ctype.h>


```
int isalnum(int c); c가 숫자 문자나 영문 알파벳의 ASCII 코드 값인지 판별
int isalpha(int c); c가 영문 알파벳의 ASCII 코드 값인지 판별
int isblank(int c); c가 공백 혹은 탭의 ASCII 코드 값인지 판별
int iscntrl(int c);  c가 제어문자의 ASCII 코드 값인지 판별
int isdigit(int c); c가 숫자 문자의 ASCII 코드 값인지 판별
int isgraph(int c); c가 출력할 수 있는 문자의 ASCII 코드 값인지 판별(공백 제외)
int islower(int c); c가 소문자의 ASCII 코드 값인지 판별
int isprint(int c); c가 출력할 수 있는 문자의 ASCII 코드 값인지 판별(공백 포함)
int ispunct(int c); c가 출력할 수 있는 문자의 ASCII 코드 값인지 판별(숫자,알파벳,공백 제외)
int isspace(int c); c가 공백을 출력하는 문자의 ASCII 코드 값인지 판별
int isupper(int c); c가 대문자의 ASCII 코드 값인지 판별
int isxdigit(int c); c가 16진수에 사용하는 문자의 ASCII 코드 값인지 판별
int tolower(int c); c를 소문자로 변환
int toupper(int c); c를 대문자로 변환
```

#include <string.h>

Copying:

memcpy	Copy block of memory (function)
memmove	Move block of memory (function)
strcpy	Copy string (function)
strncpy	Copy characters from string (function)

Concatenation:

strcat	Concatenate strings (function)
strncat	Append characters from string (function)

Comparison:

memcmp	Compare two blocks of memory (function)
strcmp	Compare two strings (function)
strcoll	Compare two strings using locale (function)
strncmp	Compare characters of two strings (function)
strxfrm	Transform string using locale (function)

Searching:

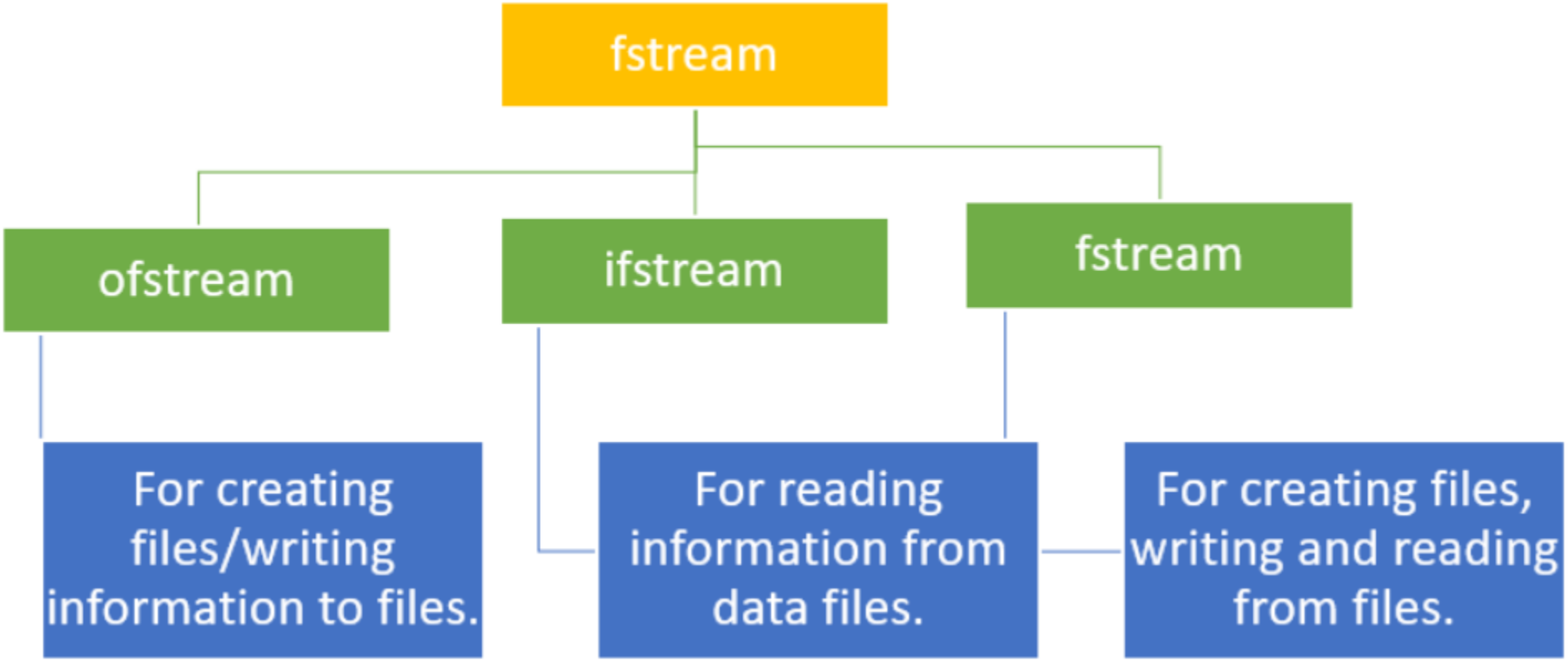
memchr	Locate character in block of memory (function)
strchr	Locate first occurrence of character in string (function)
strcspn	Get span until character in string (function)
strpbrk	Locate characters in string (function)
strrchr	Locate last occurrence of character in string (function)
strspn	Get span of character set in string (function)
strstr	Locate substring (function)
strtok	Split string into tokens (function)

File Handling

Files store data permanently in a storage device. With file handling, the output from a program can be stored in a file. Various operations can be performed on the data while in the file.

A stream is an abstraction of a device where input/output operations are performed. You can represent a stream as either a destination or a source of characters of indefinite length. This will be determined by their usage. C++ provides you with a library that comes with methods for file handling.

fstream


fstream
ofstream
ifstream
fstream
For creating files/writing information to files.
For reading information from data files.
For creating files, writing and reading from files.

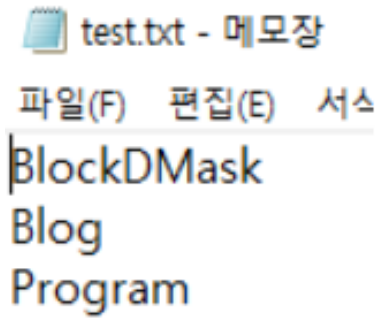
ifstream

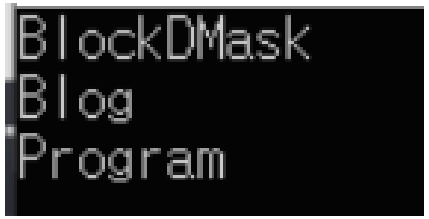
- Input file stream

```
#include <iostream>
#include <fstream.h>
#include <string.h>
using namespace std;

int main() {
  ifstream readFile;
  readFile.open("test.txt");

  if(readFile.is_open()) {
    while(!readFile.eof()) {
      string str;
      getline(readFile, str);
      cout << str << endl;
    }
    readFile.close();
  }
  return 0;
}
```





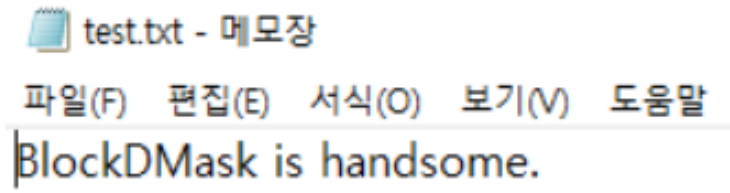
ofstream

- Output file stream

```
#include <iostream>
#include <fstream.h>
#include <string.h>
using namespace std;

int main() {
  ofstream writeFile;
  writeFile.open("test.txt");
  //1. use char[]
  char arr[11] = "BlockDMask";
  writeFile.write(arr, 10);
  //2. use string
  string str = " is handsome.";
  writeFile.write(str.c_str(), str.size());

  writeFile.close();
  return 0;
}
```



str.c_str() : C++ string -> const char*

Task 1 : Print file

Write a program that reads and outputs a given test.txt file.

★ Read the txt file line by line using ifstream.

★ File Path

If it's in drive C, “C://test.txt”

If it's in the data folder, “data/test.txt”

Task 2 : File mode

Write a program that opens the file read-only.

If the file does not exist, print out the phrase, “File not created."

Value	Description
ios:: app	The Append mode. The output sent to the file is appended to it.
ios::ate	It opens the file for the output then moves the read and write control to file's end.
ios::in	It opens the file for a read.
ios::out	It opens the file for a write.
ios::trunk	If a file exists, the file elements should be truncated prior to its opening.

Task 3 : Count Alphabet

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Write a program to count how many times the alphabet appeared in a given txt file.

★ ASCII CODE

이진법	팔진법	십진법	십육진법	모양	85진법 (아스키 85)	이진법	팔진법	십진법	십육진법	모양	85진법 (아스키 85)	이진법	팔진법	십진법	십육진법	모양	85진법 (아스키85)
0100000	040	32	20	␣		1000000	100	64	40	@	31	1100000	140	96	60	`	63
0100001	041	33	21	!	0	1000001	101	65	41	A	32	1100001	141	97	61	a	64
0100010	042	34	22	"	1	1000010	102	66	42	B	33	1100010	142	98	62	b	65
0100011	043	35	23	#	2	1000011	103	67	43	C	34	1100011	143	99	63	c	66
0100100	044	36	24	$	3	1000100	104	68	44	D	35	1100100	144	100	64	d	67
0100101	045	37	25	%	4	1000101	105	69	45	E	36	1100101	145	101	65	e	68
0100110	046	38	26	&	5	1000110	106	70	46	F	37	1100110	146	102	66	f	69
0100111	047	39	27	'	6	1000111	107	71	47	G	38	1100111	147	103	67	g	70
0101000	050	40	28	(	7	1001000	110	72	48	H	39	1101000	150	104	68	h	71
0101001	051	41	29	)	8	1001001	111	73	49	I	40	1101001	151	105	69	i	72
0101010	052	42	2A	*	9	1001010	112	74	4A	J	41	1101010	152	106	6A	j	73
0101011	053	43	2B	+	10	1001011	113	75	4B	K	42	1101011	153	107	6B	k	74
0101100	054	44	2C	,	11	1001100	114	76	4C	L	43	1101100	154	108	6C	l	75
0101101	055	45	2D	-	12	1001101	115	77	4D	M	44	1101101	155	109	6D	m	76
0101110	056	46	2E	.	13	1001110	116	78	4E	N	45	1101110	156	110	6E	n	77
0101111	057	47	2F	/	14	1001111	117	79	4F	O	46	1101111	157	111	6F	o	78
0110000	060	48	30	0	15	1010000	120	80	50	P	47	1110000	160	112	70	p	79
0110001	061	49	31	1	16	1010001	121	81	51	Q	48	1110001	161	113	71	q	80
0110010	062	50	32	2	17	1010010	122	82	52	R	49	1110010	162	114	72	r	81
0110011	063	51	33	3	18	1010011	123	83	53	S	50	1110011	163	115	73	s	82
0110100	064	52	34	4	19	1010100	124	84	54	T	51	1110100	164	116	74	t	83
0110101	065	53	35	5	20	1010101	125	85	55	U	52	1110101	165	117	75	u	84
0110110	066	54	36	6	21	1010110	126	86	56	V	53	1110110	166	118	76	v	
0110111	067	55	37	7	22	1010111	127	87	57	W	54	1110111	167	119	77	w	
0111000	070	56	38	8	23	1011000	130	88	58	X	55	1111000	170	120	78	x	
0111001	071	57	39	9	24	1011001	131	89	59	Y	56	1111001	171	121	79	y	
0111010	072	58	3A	:	25	1011010	132	90	5A	Z	57	1111010	172	122	7A	z	
0111011	073	59	3B	;	26	1011011	133	91	5B	[	58	1111011	173	123	7B	{	
0111100	074	60	3C	<	27	1011100	134	92	5C	\	59	1111100	174	124	7C	|	
0111101	075	61	3D	=	28	1011101	135	93	5D	]	60	1111101	175	125	7D	}	
0111110	076	62	3E	>	29	1011110	136	94	5E	^	61	1111110	176	126	7E	~	
0111111	077	63	3F	?	30	1011111	137	95	5F	_	62						

Task 4 : Correct sentence

Write a program to receive incomplete text, find the word and replace it with another word.

```
what is your nam
nam
name
what is your name
```

★ using <string.h>
(strncmp, strncpy, strncat)