Chapter 6 Homework

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Casting

- 형 변환
  (float), (char), (int)

```
int val = 0;
float fval = 10.15;
char c = 'a';

val = (int)fval;
val = (int)40.5;
val = (int)c;
```

- float -> int: 소수점 아래는 버린다
- char -> int: ASCII code값!

Decimal	Hex	Char	Decimal	Hex	Char
64	40	@	96	60	`
65	41	A	97	61	a
66	42	B	98	62	b
67	43	C	99	63	c
68	44	D	100	64	d
69	45	E	101	65	e
70	46	F	102	66	f
71	47	G	103	67	g
72	48	H	104	68	h
73	49	I	105	69	i
74	4A	J	106	6A	j
75	4B	K	107	6B	k
76	4C	L	108	6C	l
77	4D	M	109	6D	m
78	4E	N	110	6E	n
79	4F	O	111	6F	o
80	50	P	112	70	p
81	51	Q	113	71	q
82	52	R	114	72	r
83	53	S	115	73	s
84	54	T	116	74	t
85	55	U	117	75	u
86	56	V	118	76	v
87	57	W	119	77	w
88	58	X	120	78	x
89	59	Y	121	79	y
90	5A	Z	122	7A	z
91	5B	[	123	7B	{
92	5C	\	124	7C	|
93	5D	]	125	7D	}
94	5E	^	126	7E	~
95	5F	_	127	7F	[DEL]

Casting

- 형변환

```c
#include <stdio.h>

float func();

int main() {
    int val = 0;
    float fval = 0.0;

    val = (int) func();
    fval = func();

    printf("%d %f ₩n", val, fval);

    printf("%d %f₩n", (int) fval, fval);

    return 0;
}
float func() {
    return 4.11;
}
```

```
4 4.110000
4 4.110000
계속하려면 아무 키나 누르십시오 . . .
```

Prerequisites

- How to store a fixed-size sequential collection of elements of the same type?
  - Use “array”
- How to generate random numbers?
  - Use rand() function defined in stdlib.h
- We need more to make rand() looking like random
  - Use time() function defined in time.h
  - Use srand() function defined in stdlib.h

http://www.tutorialspoint.com/c_standard_library/

Prerequisites

```c
#include <stdio.h>
#include <stdlib.h>
#include <time.h>

int main() {
    srand(time(NULL));

    int sample[5] = { 0 };

    for (int i = 0; i < 5; i++) {
        sample[i] = rand();
        printf("sample[%d] is %d₩n", i, sample[i]);
    }

    return 0;
}
```

```
sample[0] is 20596
sample[1] is 18263
sample[2] is 18222
sample[3] is 25431
sample[4] is 8256
```

```
sample[0] is 20752
sample[1] is 9898
sample[2] is 23734
sample[3] is 822
sample[4] is 11836
```

Problem 1

- Write a program that produces 20 random numbers between 1 from 20 and print out all values by index.
- The program should store all non-duplicate values in an array (i.e., first value in Array[0], second value in Array[1], …)
- Use a single array to accomplish this task.

```
Nonrepetitive array values are:
Array[ 0 ] = 11
Array[ 1 ] = 17
Array[ 2 ] = 3
Array[ 3 ] = 18
Array[ 4 ] = 9
Array[ 5 ] = 2
Array[ 6 ] = 20
Array[ 7 ] = 4
Array[ 8 ] = 1
Array[ 9 ] = 10
Array[ 10 ] = 7
Array[ 11 ] = 13
Array[ 12 ] = 19
Array[ 13 ] = 6
Array[ 14 ] = 8
Array[ 15 ] = 16
```

Problem 2

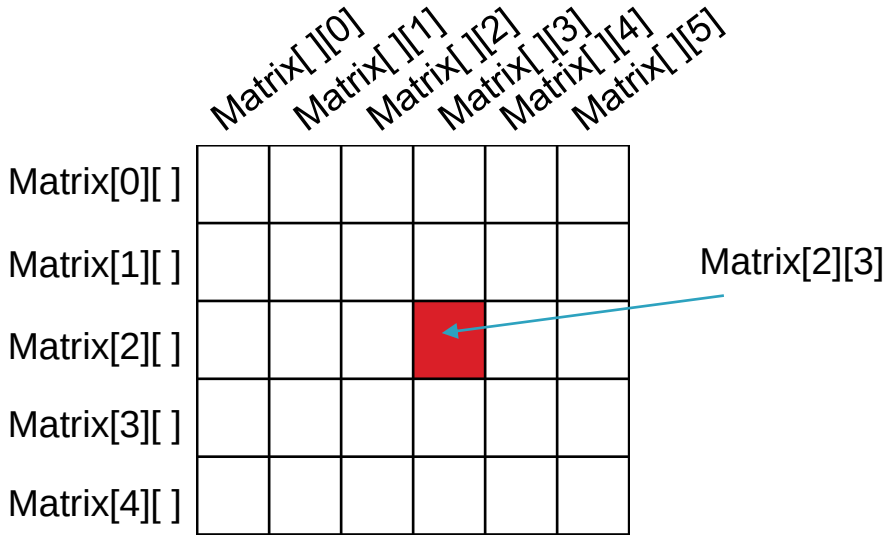
- Write program that adds two matrices by adding the corresponding entries together.
- The function should receive three integer matrices, two input matrices and one result matrix, as arguments.
- Using rand() function to initialize two input matrices
- row: 5, column: 6, range of random numbers: 1 ~ 100

```
matrix1:
  66   21   44   33   33   13
  15   45   47   13   62   84
  43   10   31   56   75   68
  21   90    5   23   65   57
  54   24   78   76   56   30

matrix2:
  54   24    6   64   44   17
 100   81   17    9   68   63
  37   38    4   70   75   90
   6   43   47   86   72   31
   7   26   45    6   71   89

result:
 120   45   50   97   77   30
 115  126   64   22  130  147
  80   48   35  126  150  158
  27  133   52  109  137   88
  61   50  123   82  127  119
```

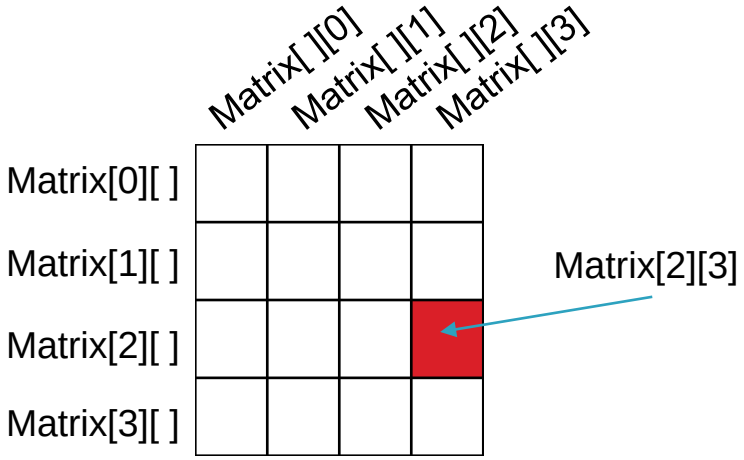
```
int maxtrix[row][column]
int matrix1[5][6] = { 0 };
```



Challenge Problem

- **This problem is not going to be counted for score.**
- Write program that multiplies two matrices by matrix multiplication.
- The function should receive three integer matrices, two input matrices and one result matrix, as arguments.
- Using rand() function to initialize two input matrices
- row: 4, column: 4, range of random numbers: 1 ~ 100

$$\begin{pmatrix} 7 & 2 & 6 & 1 \\ 6 & 6 & 2 & 5 \\ 3 & 8 & 1 & 4 \\ 1 & 8 & 5 & 6 \end{pmatrix} \cdot \begin{pmatrix} 7 & 5 & 8 & 7 \\ 1 & 8 & 8 & 6 \\ 9 & 7 & 3 & 8 \\ 5 & 3 & 7 & 9 \end{pmatrix} = \begin{pmatrix} 110 & 96 & 97 & 118 \\ 91 & 107 & 137 & 139 \\ 58 & 98 & 119 & 113 \\ 90 & 122 & 129 & 149 \end{pmatrix}$$



Homework 05

- 제출 파일: “본인의학번_HW05.zip”

  ex) 본인의 학번이 2028123456일 경우 -> 2028123456_HW05.zip

  - 아래 내용을 하나로 압축한 zip file.

    - 1.c, …, 2.c
    각각의 문제에 대한 답안 소스파일.

    - 1.png, … , 2png
    각각의 문제에 대한 소스파일을 실행한 실행결과 캡쳐 이미지.
    (jpg 나 png 형식)

- BlackBoard(kulms.korea.ac.kr) → Assignments
- Due Date : 2018/04/17 23:59
- **형식에 맞지 않는 제출물은, 미제출로 처리됩니다.**