Introduction to Computers and Programming LAB-12 2014/12/17

- ✧ Your output must be in our sample output format.
- ✧ In Problem 1~4, please wrap each of your code inside main(){} with while(1){}
- ✧ You may need ANSI code table as followed.

Dec	Hx	Oct	Char	Dec	Hx	Oct	Html	Chr	Dec	Hx	Oct	Html	Chr	Dec	Hx	Oct	Html	Chr
0	0	000	NUL (null)	32	20	040		Space	64	40	100	@	@	96	60	140	`	`
1	1	001	SOH (start of heading)	33	21	041	!	!	65	41	101	A	A	97	61	141	a	a
2	2	002	STX (start of text)	34	22	042	"	"	66	42	102	B	B	98	62	142	b	b
3	3	003	ETX (end of text)	35	23	043	#	#	67	43	103	C	C	99	63	143	c	c
4	4	004	EOT (end of transmission)	36	24	044	$	$	68	44	104	D	D	100	64	144	d	d
5	5	005	ENQ (enquiry)	37	25	045	%	%	69	45	105	E	E	101	65	145	e	e
6	6	006	ACK (acknowledge)	38	26	046	&	&	70	46	106	F	F	102	66	146	f	f
7	7	007	BEL (bell)	39	27	047	'	'	71	47	107	G	G	103	67	147	g	g
8	8	010	BS (backspace)	40	28	050	(	(	72	48	110	H	H	104	68	150	h	h
9	9	011	TAB (horizontal tab)	41	29	051	)	)	73	49	111	I	I	105	69	151	i	i
10	A	012	LF (NL line feed, new line)	42	2A	052	*	*	74	4A	112	J	J	106	6A	152	j	j
11	B	013	VT (vertical tab)	43	2B	053	+	+	75	4B	113	K	K	107	6B	153	k	k
12	C	014	FF (NP form feed, new page)	44	2C	054	,	,	76	4C	114	L	L	108	6C	154	l	l
13	D	015	CR (carriage return)	45	2D	055	-	-	77	4D	115	M	M	109	6D	155	m	m
14	E	016	SO (shift out)	46	2E	056	.	.	78	4E	116	N	N	110	6E	156	n	n
15	F	017	SI (shift in)	47	2F	057	/	/	79	4F	117	O	O	111	6F	157	o	o
16	10	020	DLE (data link escape)	48	30	060	0	0	80	50	120	P	P	112	70	160	p	p
17	11	021	DC1 (device control 1)	49	31	061	1	1	81	51	121	Q	Q	113	71	161	q	q
18	12	022	DC2 (device control 2)	50	32	062	2	2	82	52	122	R	R	114	72	162	r	r
19	13	023	DC3 (device control 3)	51	33	063	3	3	83	53	123	S	S	115	73	163	s	s
20	14	024	DC4 (device control 4)	52	34	064	4	4	84	54	124	T	T	116	74	164	t	t
21	15	025	NAK (negative acknowledge)	53	35	065	5	5	85	55	125	U	U	117	75	165	u	u
22	16	026	SYN (synchronous idle)	54	36	066	6	6	86	56	126	V	V	118	76	166	v	v
23	17	027	ETB (end of trans. block)	55	37	067	7	7	87	57	127	W	W	119	77	167	w	w
24	18	030	CAN (cancel)	56	38	070	8	8	88	58	130	X	X	120	78	170	x	x
25	19	031	EM (end of medium)	57	39	071	9	9	89	59	131	Y	Y	121	79	171	y	y
26	1A	032	SUB (substitute)	58	3A	072	:	:	90	5A	132	Z	Z	122	7A	172	z	z
27	1B	033	ESC (escape)	59	3B	073	;	;	91	5B	133	[	[	123	7B	173	{	{
28	1C	034	FS (file separator)	60	3C	074	<	<	92	5C	134	\	\	124	7C	174			|
29	1D	035	GS (group separator)	61	3D	075	=	=	93	5D	135	]	]	125	7D	175	}	}
30	1E	036	RS (record separator)	62	3E	076	>	>	94	5E	136	^	^	126	7E	176	~	~
31	1F	037	US (unit separator)	63	3F	077	?	?	95	5F	137	_	_	127	7F	177	&#127;	DEL

Source: www.LookupTables.com

1. Please finish lab_12_1.c which has the ability to analyze our input data file. The inputs are information of many different people of which the number is not larger than 1000 in "1.in"~"4.in", and there are three columns of which the first, second and third one are represented by sex, age, income, respectively. For example, one of the instance is F 18 22.2, so this one is a female, 18-year-old and has 22.2k income per year. Your program has to find out the highest income and the corresponding instance with its info, the lowest income and the corresponding instance with its info, and the average income.

```
Input filename: 1.in
The average income is : 61.220000
The maximum income is :
Sex: F, Age: 45, Income: 100.500000
The minimum income is :
Sex: F, Age: 18, Income: 22.200000
```

```
Input filename: 2.in
The average income is : 152.901000
The maximum income is :
Sex: F, Age: 81, Income: 299.760000
The minimum income is :
Sex: M, Age: 6, Income: 17.020000
```

2. Please finish lab_12_2.c which has the ability to analyze our input data. The inputs are many different countries of which the number is not larger than 10 in “1.in”~”4.in”. In the meantime, there are several existing files represented by one specific country, and those files contain the information with the same format as the question 1. Your program has to calculate the average income of each country in the input data file.

```
Input filename: c1.in
The average income of Taiwan is : 151.976530
The average income of Japan is : 172.051532
The average income of Greece is : 162.352903
The average income of Italy is : 163.163281
The maximum average income country is Taiwan
The minimum average income country is Greece
```

3. Please finish lab_12_3.c which has the ability to calculate the number of different words in our input data file which is an article containing many different words. Noted that capital and small case letters are regarded as the same.

```
Input filename: 1.in
There "11" different words.

Input filename:
```

4. (Bonus) Strings sorting in dictionary order

qsort() is a convenient way to sort the any type of array and finish in average N*log(N) time complexity. There is a qsort() tutorial named “qsort - C++ Reference.pdf” which is downloaded from http://www.cplusplus.com/reference/

Write a program to read 5 input strings with size <= 50 and sort them in dictionary order by using qsort() function. Then print them in dictionary order.
(Hint: strcmp() is suitable here.)

```
Input 5 strings:
a
abc
ab
b
aac
After qsort:
a
aac
ab
abc
b
請按任意鍵繼續 . . .
```