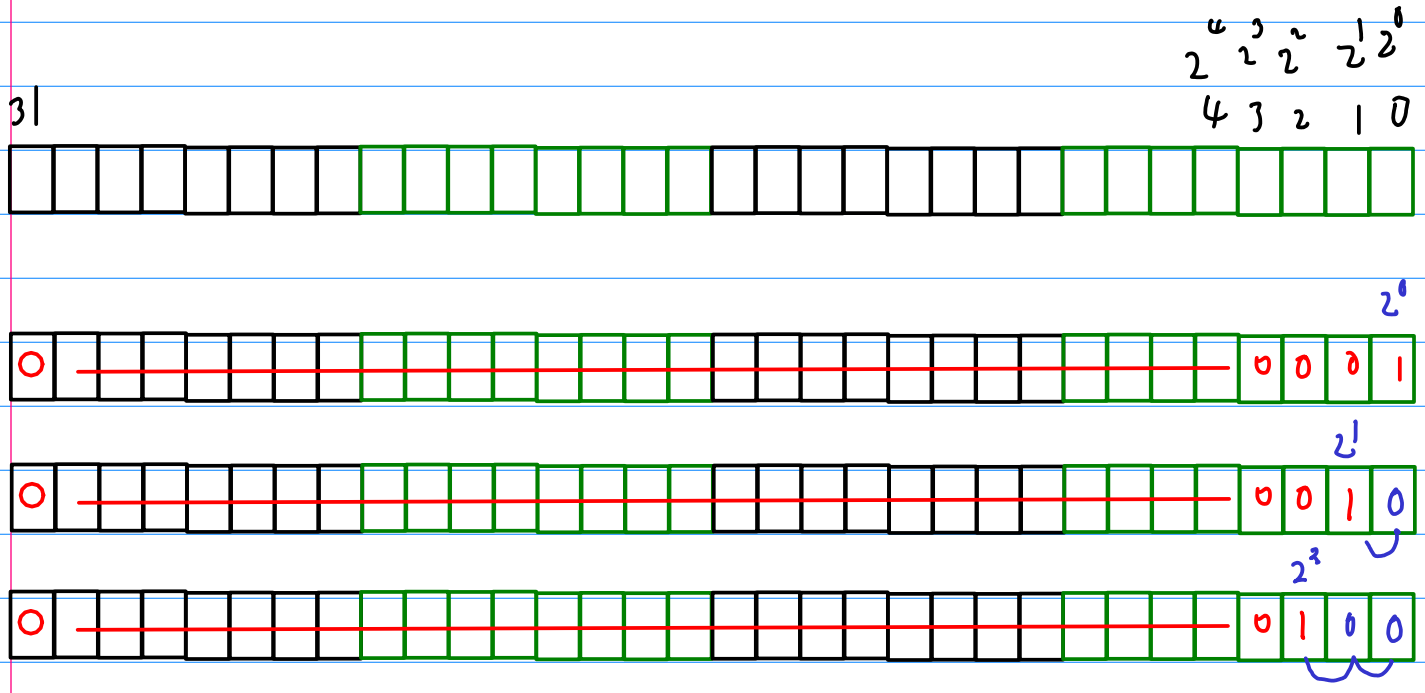
C Programming
Day10.B

2017.10.10

Bit Shift, Numbers, Random number
Arrays



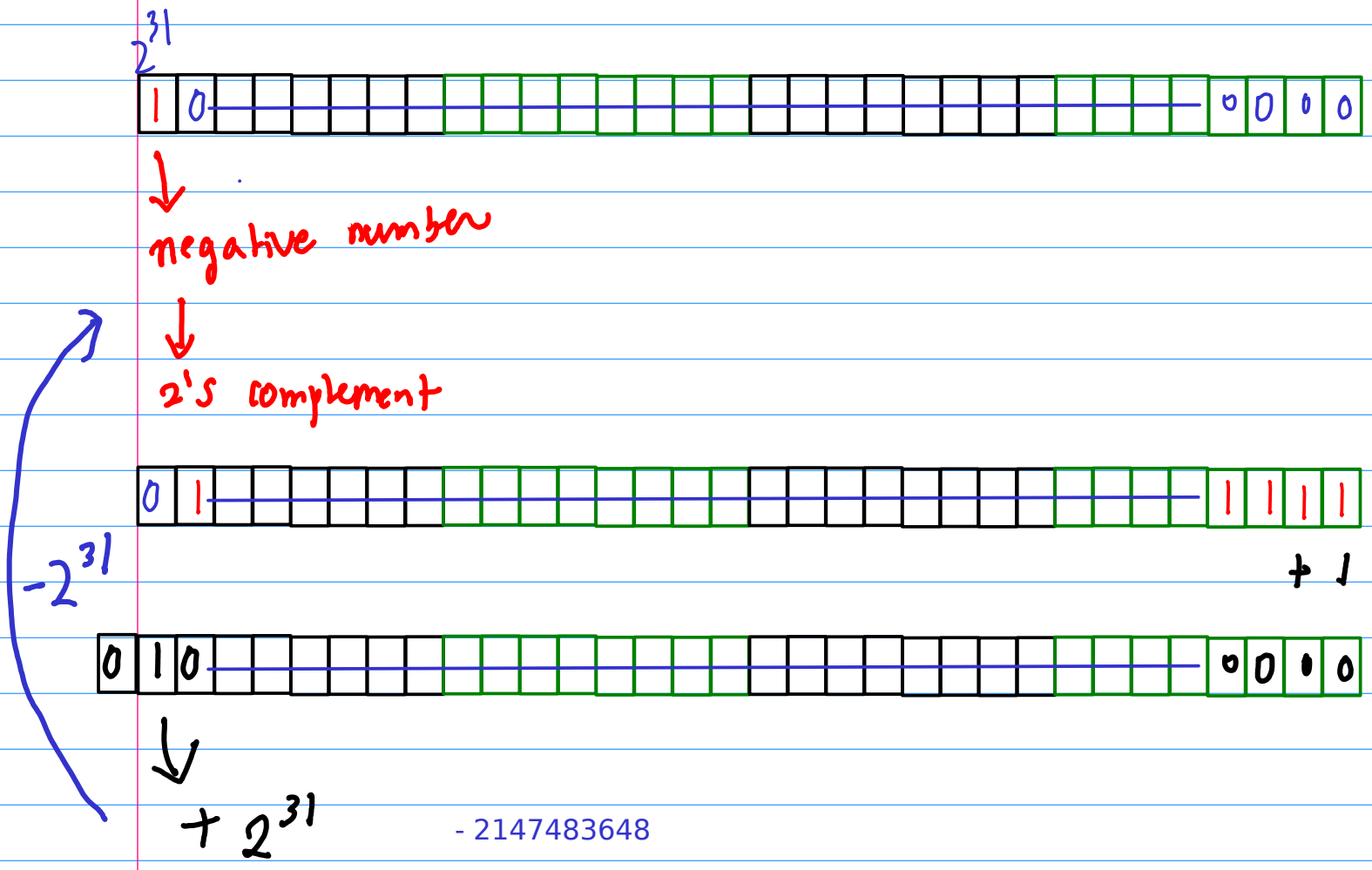
1 << 3

$1 << i \equiv 2^i$

1 << 32

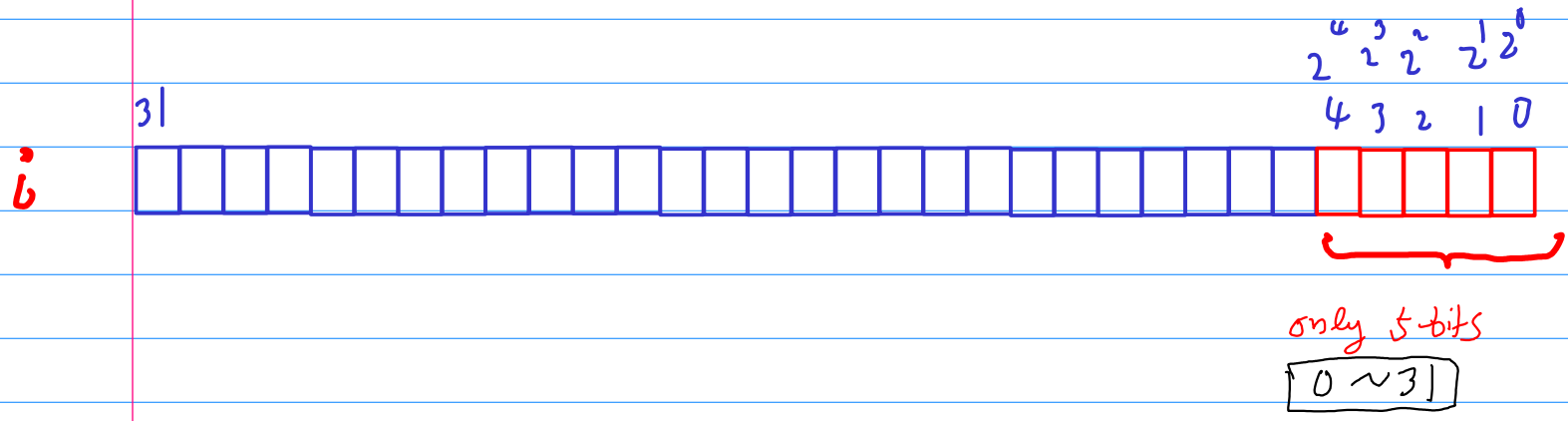
1<<31

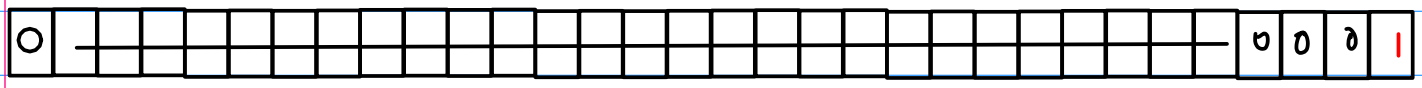
$1 << i \equiv 2^i$



- 2147483648

1 << i



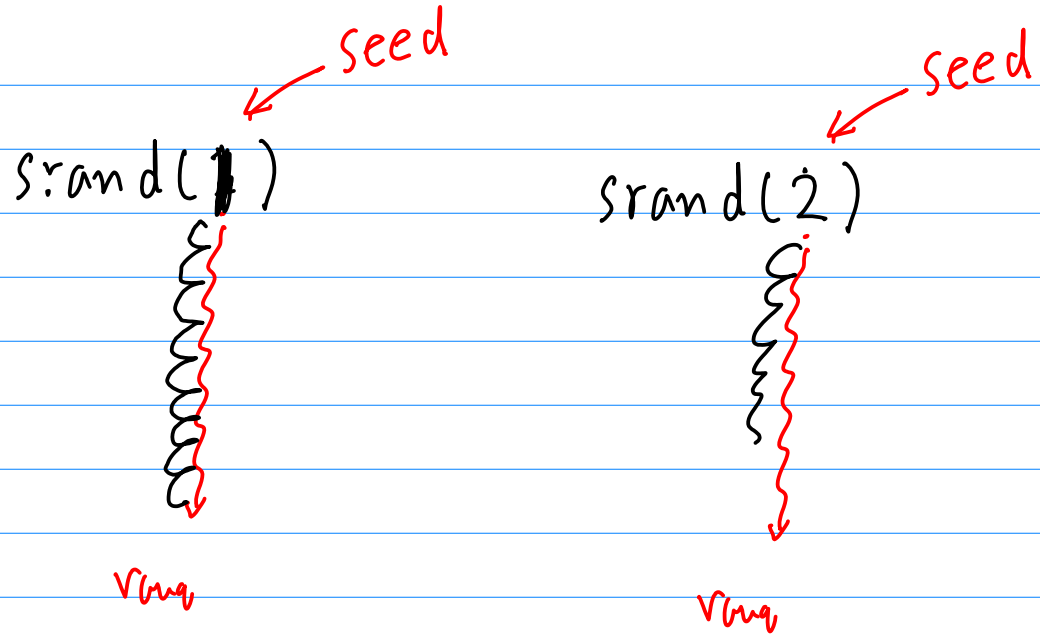


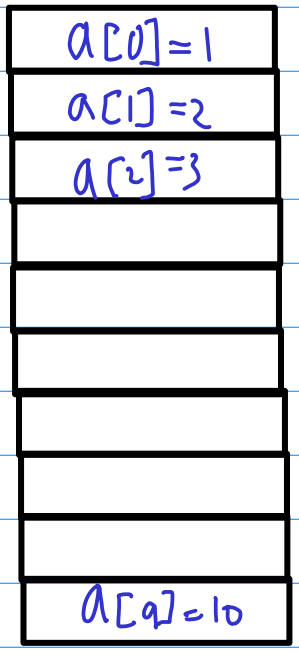
$$
\begin{aligned}
& 1 << 1 \\
= \; & 1 << 33 \\
= \; & 1 << 65
\end{aligned}
$$

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

int main(void) {
  int i;
  int m;

  for (i=0; i<256; ++i) {
    m = (1 << i);
    printf("2^%2d    = %16d\n", i, m);
  }

  printf("\nRAND_MAX= %16d\n", RAND_MAX);
}
```

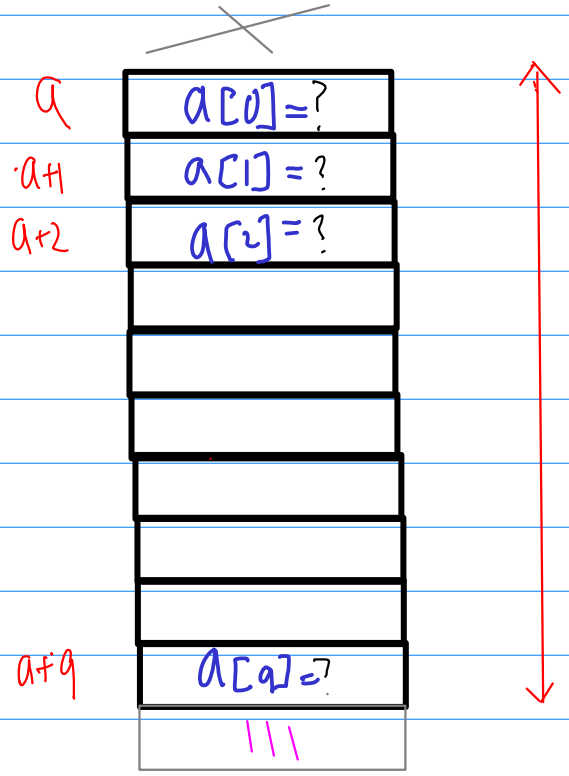
```
2^ 0  =            1   2^32  =            1   2^64  =            1
2^ 1  =            2   2^33  =            2   2^65  =            2
2^ 2  =            4   2^34  =            4   2^66  =            4
2^ 3  =            8   2^35  =            8   2^67  =            8
2^ 4  =           16   2^36  =           16   2^68  =           16
2^ 5  =           32   2^37  =           32   2^69  =           32
2^ 6  =           64   2^38  =           64   2^70  =           64
2^ 7  =          128   2^39  =          128   2^71  =          128
2^ 8  =          256   2^40  =          256   2^72  =          256
2^ 9  =          512   2^41  =          512   2^73  =          512
2^10  =         1024   2^42  =         1024   2^74  =         1024
2^11  =         2048   2^43  =         2048   2^75  =         2048
2^12  =         4096   2^44  =         4096   2^76  =         4096
2^13  =         8192   2^45  =         8192   2^77  =         8192
2^14  =        16384   2^46  =        16384   2^78  =        16384
2^15  =        32768   2^47  =        32768   2^79  =        32768
2^16  =        65536   2^48  =        65536   2^80  =        65536
2^17  =       131072   2^49  =       131072   2^81  =       131072
2^18  =       262144   2^50  =       262144   2^82  =       262144
2^19  =       524288   2^51  =       524288   2^83  =       524288
2^20  =      1048576   2^52  =      1048576   2^84  =      1048576
2^21  =      2097152   2^53  =      2097152   2^85  =      2097152
2^22  =      4194304   2^54  =      4194304   2^86  =      4194304
2^23  =      8388608   2^55  =      8388608   2^87  =      8388608
2^24  =     16777216   2^56  =     16777216   2^88  =     16777216
2^25  =     33554432   2^57  =     33554432   2^89  =     33554432
2^26  =     67108864   2^58  =     67108864   2^90  =     67108864
2^27  =    134217728   2^59  =    134217728   2^91  =    134217728
2^28  =    268435456   2^60  =    268435456   2^92  =    268435456
2^29  =    536870912   2^61  =    536870912   2^93  =    536870912
2^30  =   1073741824   2^62  =   1073741824   2^94  =   1073741824
2^31  =  -2147483648   2^63  =  -2147483648   2^95  =  -2147483648
```

2^64	=	1	2^128	=	1	2^128	=	1
2^65	=	2	2^129	=	2	2^129	=	2
2^66	=	4	2^130	=	4	2^130	=	4
2^67	=	8	2^131	=	8	2^131	=	8
2^68	=	16	2^132	=	16	2^132	=	16
2^69	=	32	2^133	=	32	2^133	=	32
2^70	=	64	2^134	=	64	2^134	=	64
2^71	=	128	2^135	=	128	2^135	=	128
2^72	=	256	2^136	=	256	2^136	=	256
2^73	=	512	2^137	=	512	2^137	=	512
2^74	=	1024	2^138	=	1024	2^138	=	1024
2^75	=	2048	2^139	=	2048	2^139	=	2048
2^76	=	4096	2^140	=	4096	2^140	=	4096
2^77	=	8192	2^141	=	8192	2^141	=	8192
2^78	=	16384	2^142	=	16384	2^142	=	16384
2^79	=	32768	2^143	=	32768	2^143	=	32768
2^80	=	65536	2^144	=	65536	2^144	=	65536
2^81	=	131072	2^145	=	131072	2^145	=	131072
2^82	=	262144	2^146	=	262144	2^146	=	262144
2^83	=	524288	2^147	=	524288	2^147	=	524288
2^84	=	1048576	2^148	=	1048576	2^148	=	1048576
2^85	=	2097152	2^149	=	2097152	2^149	=	2097152
2^86	=	4194304	2^150	=	4194304	2^150	=	4194304
2^87	=	8388608	2^151	=	8388608	2^151	=	8388608
2^88	=	16777216	2^152	=	16777216	2^152	=	16777216
2^89	=	33554432	2^153	=	33554432	2^153	=	33554432
2^90	=	67108864	2^154	=	67108864	2^154	=	67108864
2^91	=	134217728	2^155	=	134217728	2^155	=	134217728
2^92	=	268435456	2^156	=	268435456	2^156	=	268435456
2^93	=	536870912	2^157	=	536870912	2^157	=	536870912
2^94	=	1073741824	2^158	=	1073741824	2^158	=	1073741824
2^95	=	-2147483648	2^159	=	-2147483648	2^159	=	-2147483648


seed
srand(1)
rand
seed
srand(2)
rand


a[0]=1
a[1]=2
a[2]=3
a[9]=10

```
int a[10];
```



a[10] = 111;