

Output for roll no. 2019111012

-12 4294967284 4294967283 -13 -34 65524

My Roll Number is 2019111012.

So $x = 2019111012 \% 100 = 12$

So x is 12.

int a = -12 (ie $-1 * x$)

int a is represented in memory as given below:

int a: 11111111 11111111 11111111 11110100 (2's Complement form of 4 byte binary representation of positive 12)

This binary string is copied into unsigned int b by typecasting a as unsigned int

Now in memory unsigned int b is represented as given below:

int b: 11111111 11111111 11111111 11110100

So b is treated as an unsigned number hence its value will MAX VALUE of unsigned int - missing bits that is $4294967295 - 1 - 2 - 8$

Which is same as $b = 4294967284$

unsigned int c = Unsigned int max value - x

= $4294967295 - 12$

= 4294967283

c is represented in memory as:

11111111 11111111 11111111 11110011

Since it is unsigned it reads it as positive.

Now this binary string is copied into an int d by type casting it as int

So d is represented in memory as:

11111111 11111111 11111111 11110011

Which is read as negative number as the starting bit or MSB is 1.

So it will take the 2's complement of the string that is

00000000 00000000 00000000 00001101

And prints it as -13

Now int p = $65490 + 12$

= 65502

P is represented in memory as:

00000000 00000000 11111111 11011110

Now this p is type casted as a short int which has only 2 bytes so it takes the last two bytes and copies it into short int e.

Now e is represented in memory as:

11111111 11011110

Since it is signed short int and the representation starts with a 1, it is read as negative with the system taking its 2's complement and printing it with negative sign. The 2's complement of the string is 00000000 00100010 which will be printed as -34.

Now a is type casted as an unsigned short which is only 2 bytes long when a is four bytes, so it takes last 2 bytes and copies it to unsigned short f.

So f is represented in memory as 11111111 110100

So f is taken as a positive number and evaluates to unsigned short max - missing bits which is same as $65535 - 8 - 2 - 1 = 65524$.

So the final output will be

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