**The practical assignment 9**

In [cryptography](https://en.wikipedia.org/wiki/Cryptography), the simple XOR cipher is a type of additive cipher, an [encryption algorithm](https://en.wikipedia.org/wiki/Encryption_algorithm) that operates according to the principles:

$A ⊕0=A$; $A⊕A=0$; $\left(A⊕B\right)⊕C=A⊕(B⊕C)$; $\left(B⊕A\right)⊕A=B⊕0=B$;

where ⊕ {\displaystyle \oplus } denotes the [exclusive disjunction](https://en.wikipedia.org/wiki/Exclusive_disjunction) (XOR) operation. This operation is sometimes called modulus 2 addition (or subtraction, which is identical). With this logic, a string of text can be encrypted by applying the bitwise XOR operator to every character using a given key. To decrypt the output, merely reapplying the XOR function with the key will remove the cipher.

Prove the presented operations with the following numbers

Options:

1. student 1: A = 80010, B = 45010, C = 78010

2. student 2: A = 54010, B = 32010, C = 75010

3. student 3: A = 120010, B = 90010, C = 40010

4. student 4: A = 140010, B = 87010, C = 20010

5. student 5: A = 50010, B = 37010, C = 41010

6. student 6: A = 26010, B = 107010, C = 54010

7. student 7: A = 92010, B = 27010, C = 61010

8. student 8: A = 92010, B = 58010, C = 73010

9. student 9: A = 140010, B = 71010, C = 62010