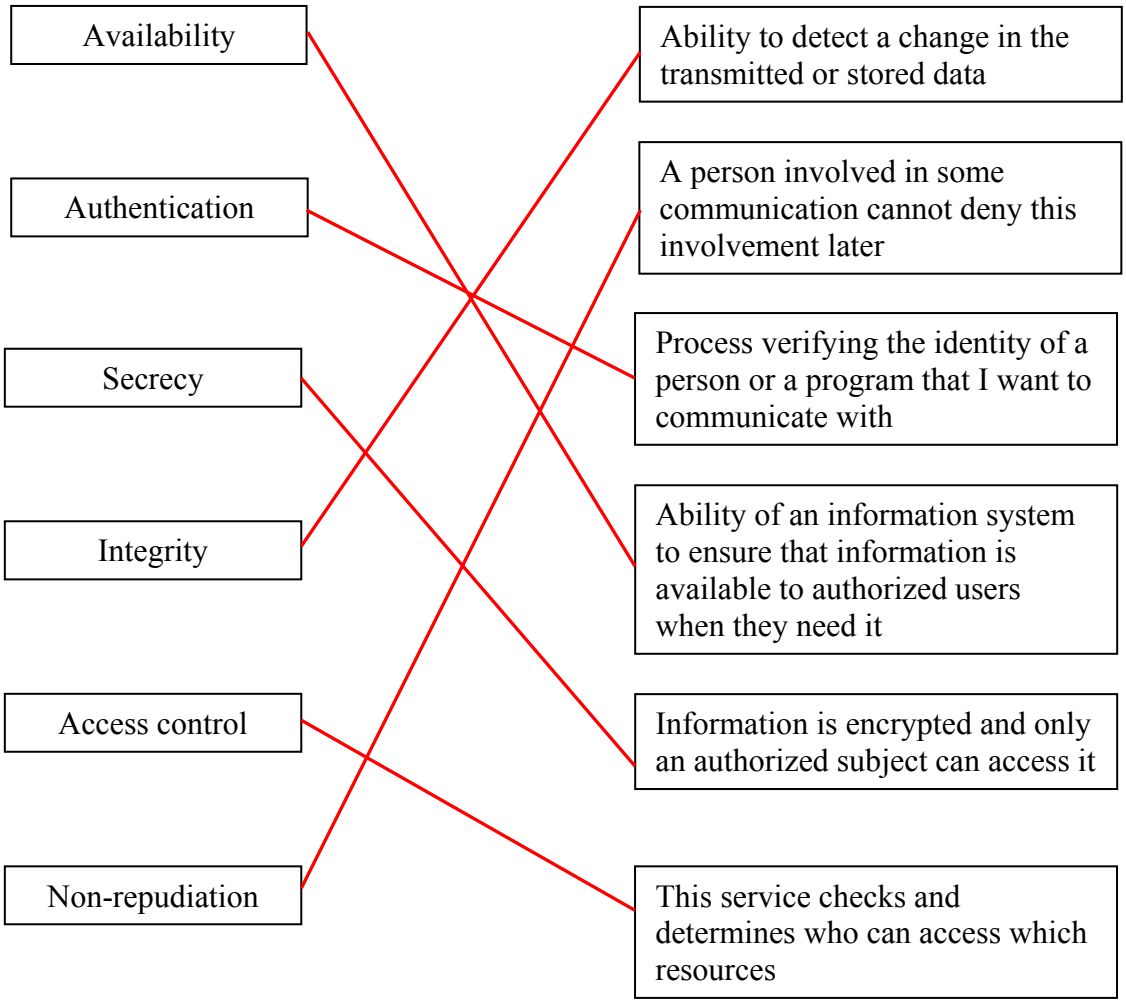
WORKSHEET C2/1

1. Assign the terms from the left column to the corresponding definitions on the right.



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2. Encrypt and decrypt a text using a conversion table (so-called substitution cipher).

plaintext alphabet	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
ciphertext alphabet	Z	V	I	R	E	A	B	C	D	F	G	H	J	K	L	M	N	O	P	Q	S	T	U	W	X	Y

Encrypt the text (quoting Jan Werich – famous Czech writer, actor etc.):

WHERE IS AN IDIOT THERE IS DANGER
UCEOE DP ZK DRDLQ QCEOE DP RZKBEO

Decrypt the text:

QCDP IDMCEO DP JLOE QCZK QUL QCLSPZKR XEZOP LHR
THIS CIPHER IS MORE THAN TWO THOUSAND YEARS OLD

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3. Modify the following texts so that the statements are true.

One of the characteristic properties of (symmetric / ~~asymmetric~~) ciphers is (~~long~~ / short) key.

One of the characteristic properties of (~~symmetric~~ / asymmetric) ciphers is (long / ~~short~~) key.

(Symmetric / ~~Asymmetric~~) encryption is **100 to 1000** times (faster / ~~slower~~) than (~~symmetric~~ / asymmetric) encryption.

(~~Symmetric~~ / Asymmetric) encryption is **100 to 1000** times (~~faster~~ / slower) than (symmetric / ~~asymmetric~~) encryption.

(~~Symmetric~~ / Asymmetric) encryption (can / ~~cannot~~) be used to create digital signature.

(Symmetric / ~~Asymmetric~~) encryption (~~can~~ / cannot) be used to create digital signature.

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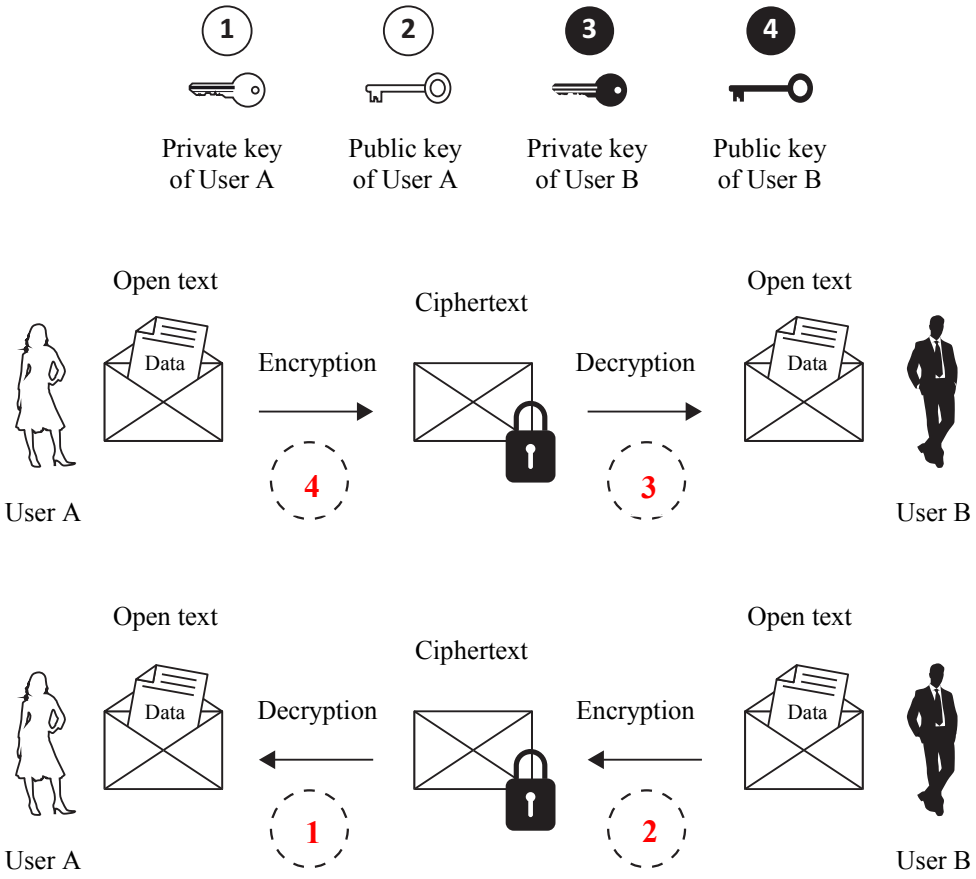
4. In the following picture mark the correct keys to be used when the communicating parties want to use <u>asymmetric cipher</u> for secure transmission of a document.



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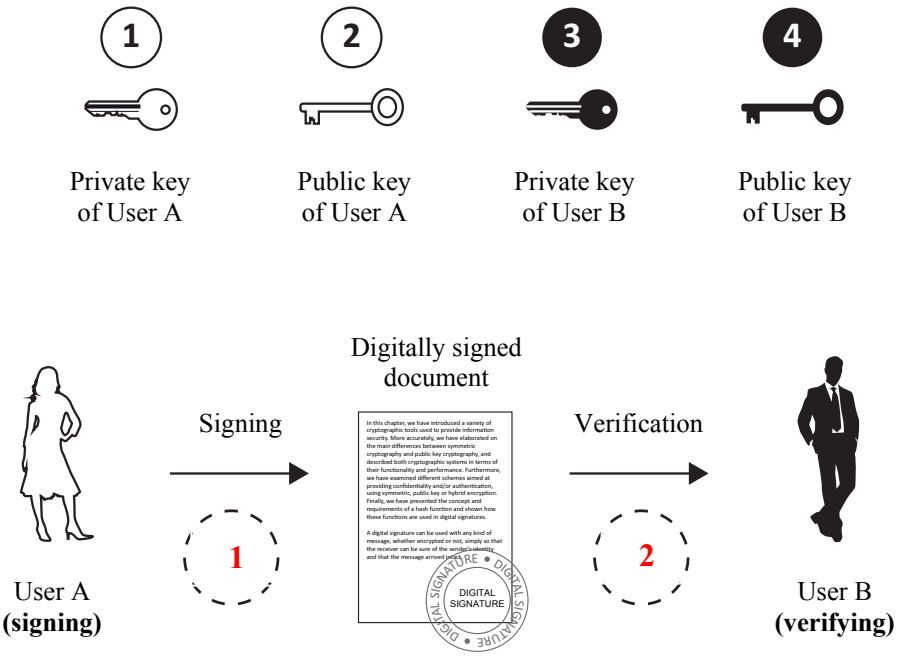
5. In the following picture mark the correct keys to be used for when digital signature should be created and verified.



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6. Fill the numbers of correct statements concerning hash functions in the following table.

Hash function characteristics include:

3
6
8

1 – The minimum length of the input must be 1024 bits **(no)**
2 – The output length is variable **(no)**
3 – The output length is constant **(yes)**
4 – The inverse hash function can be used to retrieve the original data **(no)**
5 – Two different input messages **always** produce different outputs (so-called hash) **(no, there may occur collisions, usually undesirable)**
6 – Hash function is today commonly used to create digital signatures **(yes)**
7 – Hash function is today commonly used to encrypt data **(no)**
8 – Its purpose is to produce a unique output from a unique input message **(yes)**

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7. Modify the following text so that the statement is true.

Symmetric encryption uses (the same key / ~~two different keys~~) for encryption and decryption.

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