

ABSTRACT

According to an embodiment, a portable electronic device includes a memory, an interface, and a processor. The memory stores cryptographic information including a cryptographic algorithm. The interface is configured to communicate with an information processing apparatus. The processor is configured to generate a random number. The interface is configured to transmit the cryptographic information to the information processing apparatus and receive a public key transmitted from the information processing apparatus, the public key and a secret key being generated based on the cryptographic algorithm. The processor is configured to generate an encrypted random number from the random number through an encryption process based on the public key. The interface is configured to transmit the encrypted random number to the information processing apparatus. The processor is configured to generate a session key for use for communication with the information processing apparatus based on the random number.