VYSOKÉ UČENÍ TECHNICKÉ V BRNĚ
FAKULTA INFORMAČNÍCH TECHNOLOGIÍ

IMAP Client – Manual

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Contents

1 Assignment

The project assignment in the ISA (Network Applications and Network Administration) subject was to create IMAP4rev1 (according to RFC3501), which will be able to communicate only over TCP/IP as well as using SLL/TLS - IMAPS. The following program downloads emails from the defined server in the argument of the program call and saves them in the output directory. If the path to the output repository specified by the argument does not exist, the program creates it on this path.

2 Implementation Details

The principles of object-oriented programming have been applied to the program code. The program is divided into logical classes such as the `ClientConfig` class - which takes care of the configuration of the resulting IMAP client based on the input arguments of the program, which it also processes. On the result of the configuration, either an instance of the `NonSecureImapClient` class is created, which mediates communication, classically only over TCP/IP, or an instance of the `SecureImapClient` class, which also uses SSL/TLS in addition to TCP/IP. Both classes `NonSecureImapClient` and `SecureImapClient` inherit basic properties from `BaseImapClient`, which provides features that are common to both derived classes, such as generating a TAG, finding the value of the current TAG or translating a hostname to an IPv4 address.

2.1 Implementation of Client

The NonSecureImapClient and SecureClient classes are characterized by their very similar behavior, at the beginning when the class is instantiated they receive information like `MailBox`, `OutputDirectory`,`HeadersOnly` and `NewOnly` as input parameters. These parameters are used to define further behavior of the program and their description is given in table below.

Parameter	**Description**
MailBox	Mailbox from which emails will be downloaded
OutputDirectory	Specifies where downloaded emails will be stored
HeadersOnly	Only header of the emails will be downloaded
NewOnly	Only unseen emails will be downloaded

Then, from the user's point of view, the classes only need to call the Run method with the parameters server address, port login and password. This method interacts with the server and its behaviour is as follows.

2.2 Program Flow

Here Will Be Description.

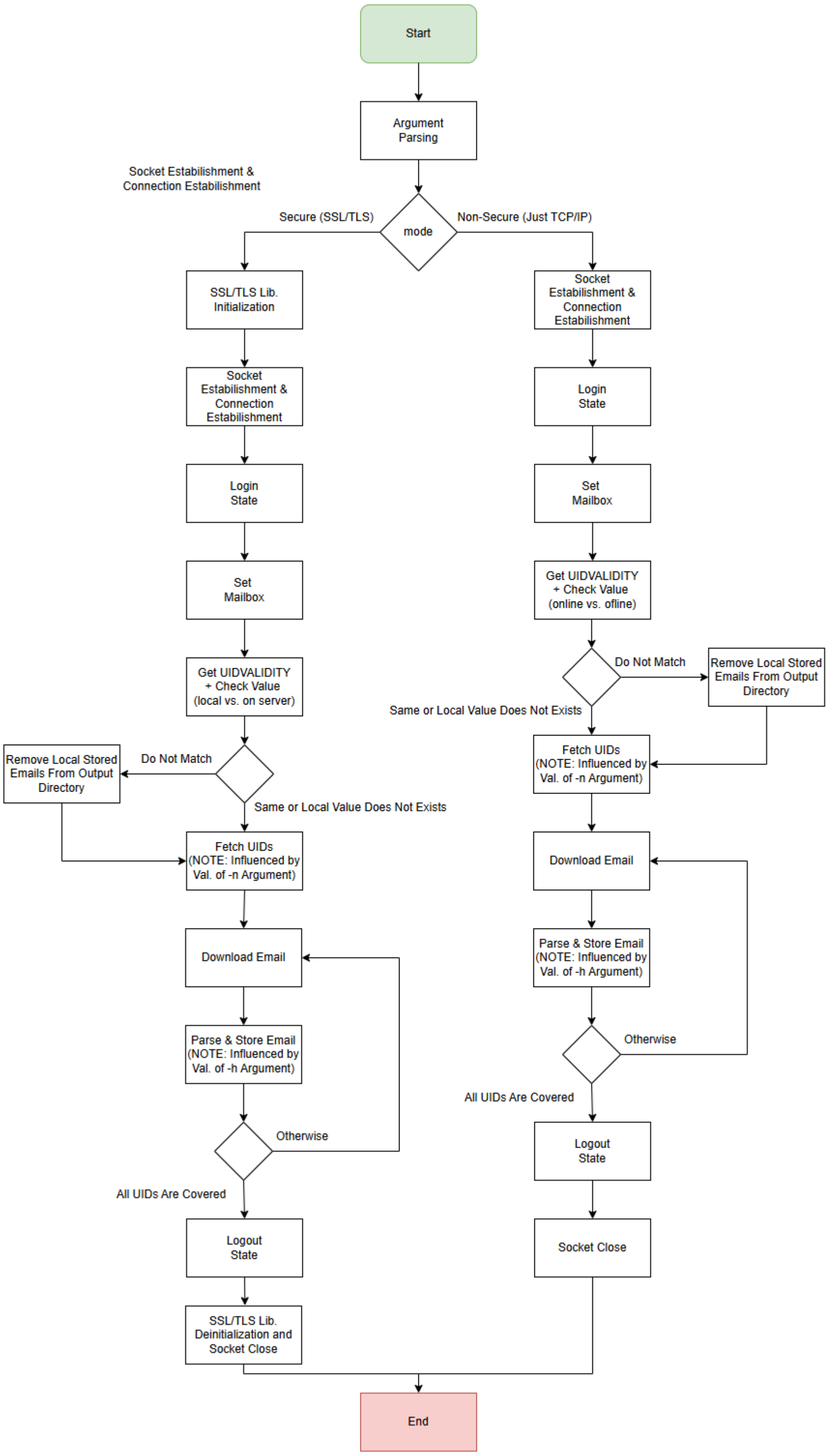
Start
Argument Parsing
Socket Estabilishment & Connection Estabilishment
Secure (SSL/TLS)
mode
Non-Secure (Just TCP/IP)
SSL/TLS Lib. Initialization
Socket Estabilishment & Connection Estabilishment
Login State
Set Mailbox
Get UIDVALIDITY + Check Value (local vs. on server)
Remove Local Stored Emails From Output Directory
Do Not Match
Same or Local Value Does Not Exists
Fetch UIDs (NOTE: Influenced by Val. of -n Argument)
Download Email
Parse & Store Email (NOTE: Influenced by Val. of -h Argument)
Otherwise
All UIDs Are Covered
Logout State
SSL/TLS Lib. Deinitialization and Socket Close
Socket Estabilishment & Connection Estabilishment
Login State
Set Mailbox
Get UIDVALIDITY + Check Value (online vs. ofline)
Do Not Match
Remove Local Stored Emails From Output Directory
Same or Local Value Does Not Exists
Fetch UIDs (NOTE: Influenced by Val. of -n Argument)
Download Email
Parse & Store Email (NOTE: Influenced by Val. of -h Argument)
Otherwise
All UIDs Are Covered
Logout State
Socket Close
End

Figure 1: Program Flow Diagram

2.3 Classes

Here Will Be Description.

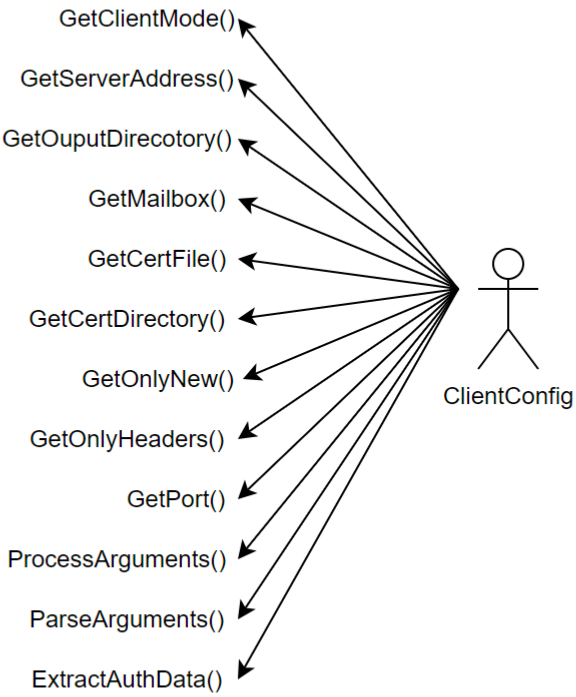

Figure 2: Program Flow Diagram

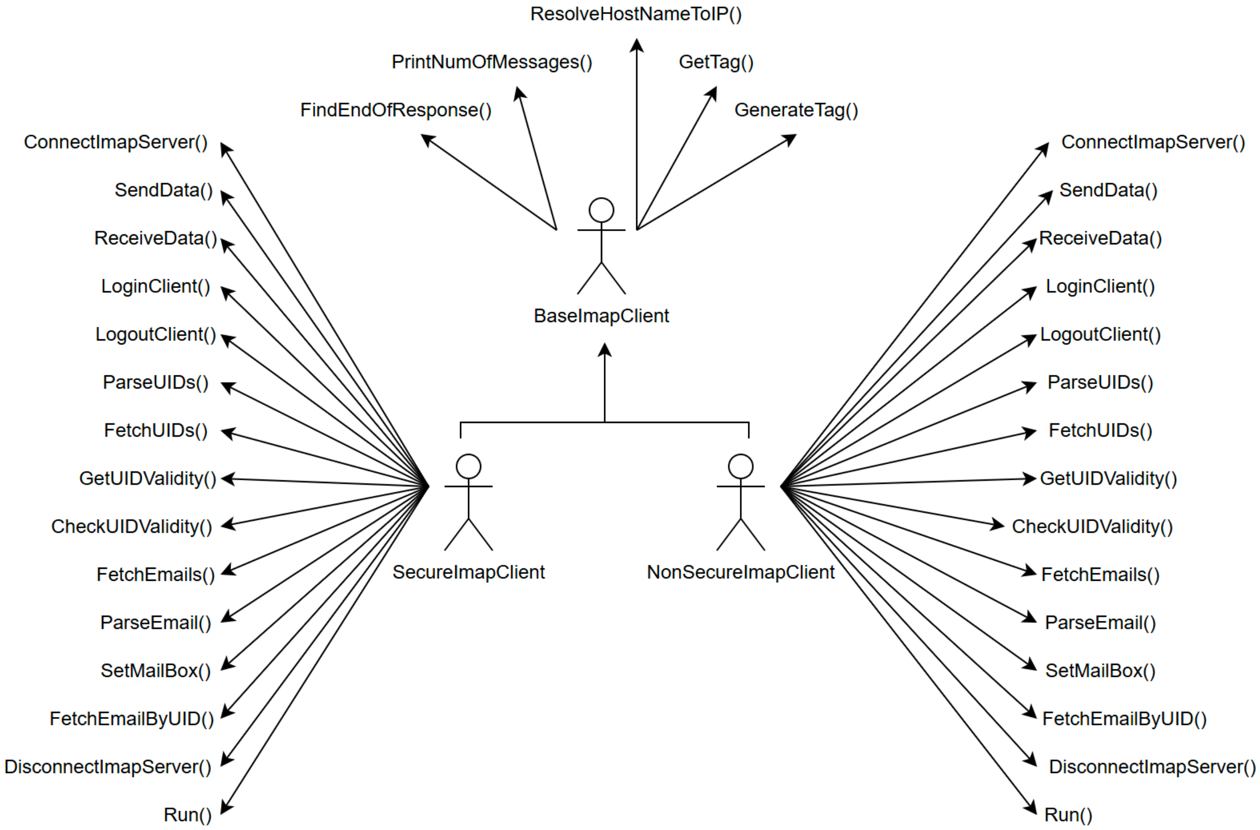

Figure 3: Program Flow Diagram

3 Return Codes

Název	Datový typ	Hodnota
OUTPUT_DIR_NOT_CREATED	int	-7
UIDVALIDITY_FILE_NOT_FOUND	int	-6
UIDVALIDITY_FILE_ERROR	int	-5
CREATE_CONNECTION_FAILED	int	-4
SSL_CERT_VERIFICATION_FAILED	int	-3
FETCH_EMAIL_FAILED	int	-2
SUCCESS	int	0
NO_IP_ADDR_FOUND	int	1
PARSE_ARGUMENTS_FAILED	int	2
PARSE_CREDENTIALS_FAILED	int	3
SERVER_UNKNOWN_RESPONSE	int	4
TRANSMIT_DATA_FAILED	int	5
RECEIVE_DATA_FAILED	int	6
RESPONSE_NOT_FOUND	int	7
PARSE_BY_REGEX_FAILED	int	8
NON_UIDS_RECEIVED	int	9
CONTINUE_IN_RECEIVING	int	10
UNDEFINED_STATE	int	11
UID_VALIDITY_ERROR_IN_RECV	int	14
REMOVAL_OF_EMAILS_FAILED	int	15
BAD_RESPONSE	string	"Bad Response :("