Homework 3
Mail System

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Requirements

1. Basic (10%)

2. User Auth, no open relay (10%)

3. Virtual User Accounts (10%)

4. SPF, DKIM, DMARC (25%)

5. Mail Forwarding, SRS (15%)

6. External Programs (15%)

7. Greylisting (5%)

8. Spam Filtering (10%)

Basic

- MX record (5%)
  - Set proper MX record for `ID.nasa` domain.
  - It's recommended to use the `192.168.ID.25` IP address.

- STARTTLS on IMAP/SMTP (5%)
  - Use a self-signed certificate.

User Auth

- User Authentication on IMAP/SMTP (5%)
  - Only allow sending mails with authenticated users.
  - Prevent users from faking other users in the "envelope from" field.
    - Be aware of both fake addresses and null senders.

- No Open Relay (5%)

Virtual User Accounts

- Virtual users (5%)
  - Retrieve the `TA_PASSWORD` from your Online Judge Profile.
  - Set up virtual user accounts TA1, TA2, TA3, TA4 with the password `TA_PASSWORD`.
  - Keep copies of all emails received by TA1 and TA2.
    - You might also keep the emails for TA3 and TA4 for debugging purposes.

- Virtual aliases (5%)
  - Alias `NASATA@` to `TA1@`
  - Alias `user+xxx@` to `user@` for all accounts
    - e.g. `TA3+nasa@` send to `TA3@`

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SPF, DKIM, DMARC (Requirements 4/8)

- SPF record (5%)
  - Only allow your server to send mail using the domain.
  - Prevent other servers from pretending to be you and drop these invalid emails.

- DKIM (10%)
  - Sign outgoing mail using your private key.

- DMARC (5%)
  - Publish a DMARC policy telling others to drop emails that fail SPF/DKIM checks.

- Ensure you added the TXT record for SPF, DKIM, and DMARC.

- Check incoming mail for valid SPF, DKIM, and DMARC as well. (5%)

Mail Forwarding

- ## Mail Forwarding (10%)
  - Forward mails for `TA2@ID.nasa` to `TA2-ID@mail.nasa` **address.**

- ## SRS Rewrite (5%)
  - Implement the Sender Rewriting Scheme (SRS) when forwarding mail to avoid SPF failures.

External Programs (Requirements 6/8)

- Vacation Responder (5%)
  - Set up a vacation autoresponder that replies to incoming mail for `TA3@ID.nasa.`
  - Please use "Re: Subject" as the subject, and quote the original mail body.

- Ping Probe (10%)
  - `curl -k --data-raw "{the mail body}" https://mail.nasa/ping-ID`
  - Triggered by an email to `TA4@ID.nasa`, with the subject "`[NASA] Ping Test`".

Summary for User Accounts

- **TA1**: Normal User
  - Also receive mails for `NASATA`.

- **TA2**: Mail Forwarding
  - Forward mails to `TA2-ID@mail.nasa`.

- **TA3**: Vacation Responder
  - Reply anything with mail quote.

- **TA4**: Ping Probe
  - Specific mail triggers an HTTP POST request to `mail.nasa`.

- All TA Account
  - All the other features.

# Greylisting (Requirements 7/8)

- Greylisting (5%)
  - For incoming mail from the new mail server / account.
  - Greylist for 30 seconds.
  - Whitelist for `mail.nasa` domain.

- Ensure your server can pass graylisting checks from other servers.

Spam Filtering (Requirements 8/8)

- Spam Filtering (10%)
  - Tag the subject line with `[SPAM]` for messages detected as spam or containing viruses.
  - You can use rspamd, amavisd-new or SpamAssassin.

- You can verify using the GTUBE strings and the EICAR test file.

Tasks Dependency

The skipped check points will show "None" as output.
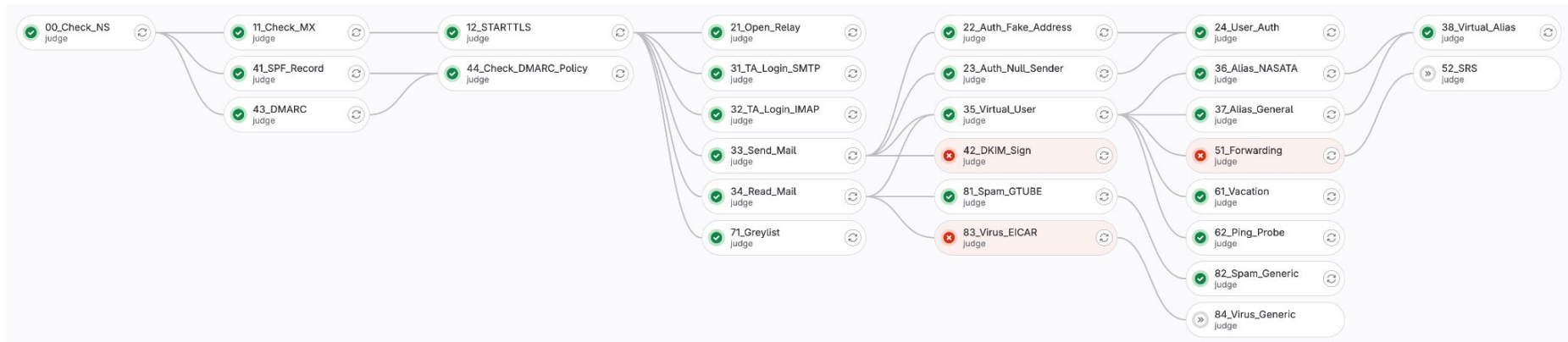
Reminder

- Your work will be tested by the Online Judge system.
    - Test cases may change, so ensure they are implemented correctly.

- Make sure the system remains functional after reboots.

- Take periodic backups of config files.

- Judge will be closed on May 22 (Wed), 23:59.

- Please upload config files to E3 in tgz format before due.
    - Include postfix and dovecot configs (or the tools you use).
    - We may schedule a demo for selected students.