# Communication Networks

Spring 2022

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# Two important pillars of today's Internet

Internet-wide routing

Covered in the first project

Reliable transport

Main focus of the second project

# Implement your own Reliable Transport Protocol

recover from packet loss
and reordering

# Implement your own Reliable Transport Protocol

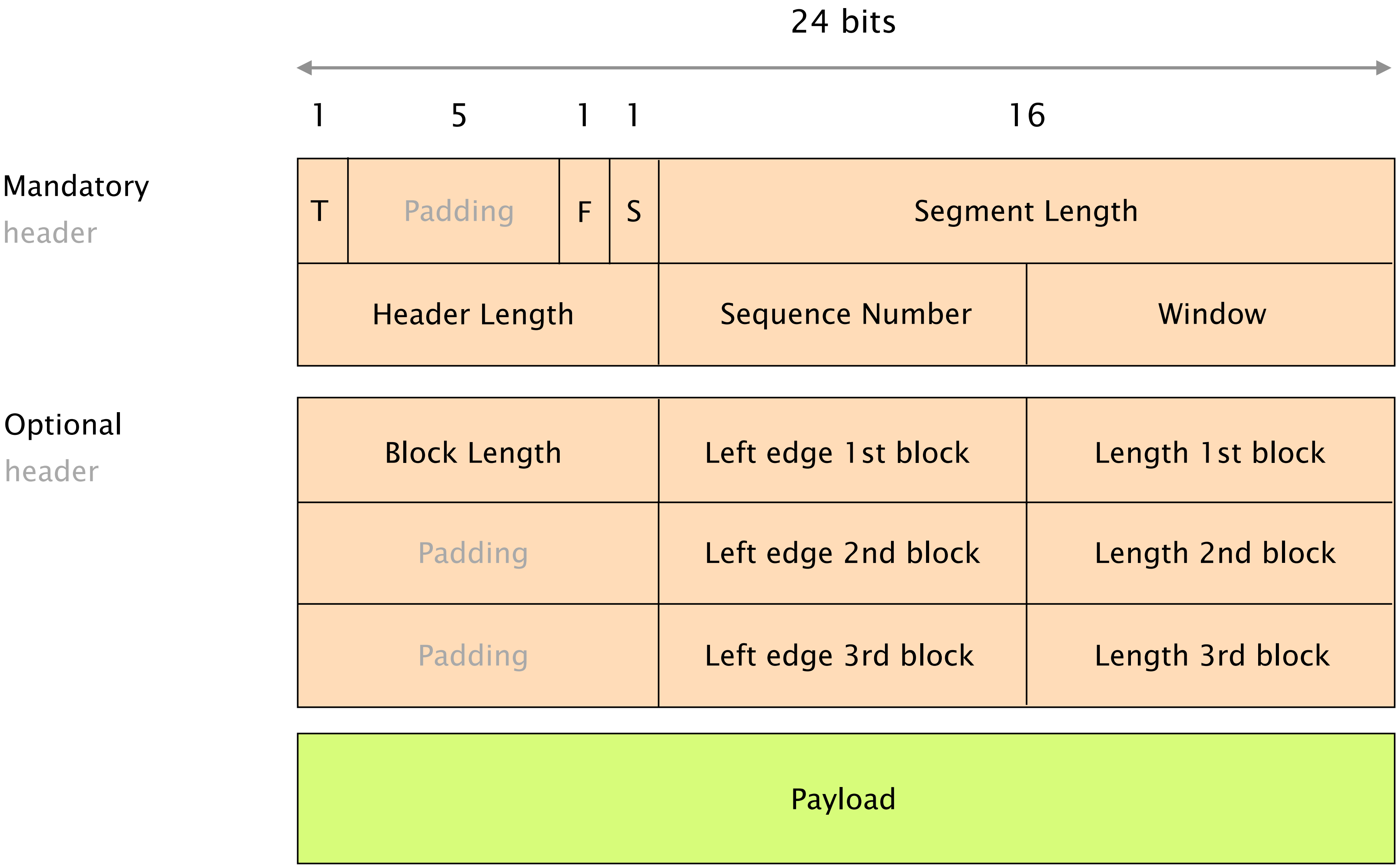
recover from packet loss
and reordering

| | |
|---|---|
| Part 1 | Complete a simple Go-Back-N implementation<br>Retransmit all packets after a timeout |
| Part 2 | Add support for Selective Repeat<br>Fast retransmission after duplicated ACKs |
| Part 3 | Add support for Selective Acknowledgements (SACK)<br>SACK contains blocks of correctly received segments |

# Proposed timetable

| | |
|---|---|
| Part 1 | Complete a simple Go-Back-N implementation |
| 20.05.2022 | Retransmit all packets after a timeout |
| Part 2 | Add support for Selective Repeat |
| 27.05.2022 | Fast retransmission after duplicated ACKs |
| Part 3 | Add support for Selective Acknowledgements (SACK) |
| 03.06.2022 | SACK contains blocks of correctly received segments |

# We use a custom header for the GBN protocol



24 bits

1 5 1 1 16

Mandatory header

T | Padding | F | S | Segment Length

Header Length | Sequence Number | Window

Optional header

Block Length | Left edge 1st block | Length 1st block

Padding | Left edge 2nd block | Length 2nd block

Padding | Left edge 3rd block | Length 3rd block

Payload

# The assignment text on the GitLab wiki contains a lot more details

You will implement a GBN sender and receiver

Using Python as programming language

We already provide you with a skeleton implementation

Have a look at the comments in the skeleton files

Make sure that you follow the instructions carefully

Interoperability will be difficult otherwise

# A new VM and GitLab repository wait for you

let us know if you
have no access

The skeleton files are already on your VM

Use git (preferred) or scp to transfer files

Your group numbers changed

**Important:** VM port number is **2000** + group number

Use the password from your GitLab repository

Let’s see how the you can execute your GBN implementation and test it

# There are multiple options to test your implementation

Run your sender against your receiver

This should be your main focus

Use the various tests in the test framework

Will allow you to test specific features

Run against code of another group

The test framework handles that as well

We also generate an interoperability matrix on our website

# Your project grade counts as 10% to your final grade

Project grade

=

Test performance (public)

Computed based on the amount of points you get

TEST_POINTS / 400 * 4.5 + 1

This way you can get up to a 5.5

Running all the tests will show you this grade

+

Additional tests (secret)

We will run your submitted code through additional tests

They are **not** available to you during the project

In addition we check your code for basic comments

This way you can get the remaining 0.5 grade points

# We will check your submitted code for plagiarism using automated tools

Do not copy code from other groups

Or any other project-related sources

We had multiple clear cases in the past

You will immediately receive a one as final grade

# If you have questions

Ask on Slack or send us an email

Please use the #**transport_project** channel

We will announce additional Q&A sessions if needed

During online sessions we will also be available for calls

Follow the exercise session this Thursday

More demos and information about the test framework

# No exercise session during the second week

Due to Ascension day

ETH is closed

Soon we will announce an additional in-person session

More information follows via email and Slack

# Final comments

Deadline: June 03 2022, at midnight

Submit your code and decl. of originality via GitLab

Read the assignment text carefully

Make sure you follow all the specifications

You do **not** have to write a report

But don’t forget to comment your code