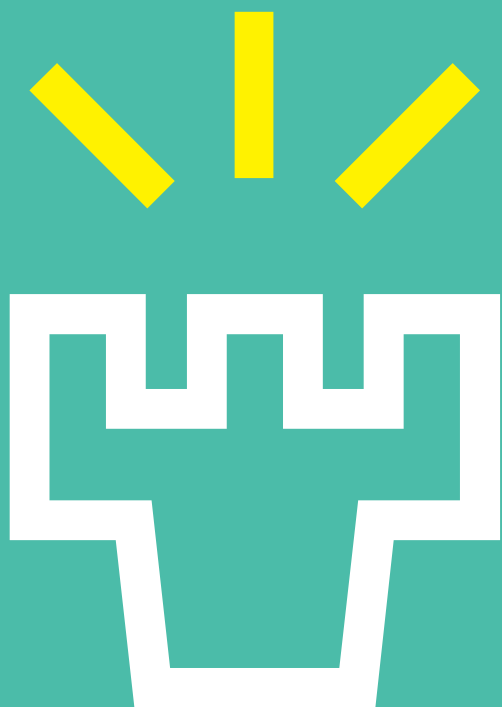




IC00AK16 Cyber Security Project

AUTUMN 2024



**UNIVERSITY
OF OULU**

LECTURE 2

FROM IDEAS TO DRAFTS

with your host,
Kimmo Halunen





Welcome back



- One week behind for the course
- This week: forming groups and moving from ideas to proposals
- In the next slide we have some FAQ from this and previous years



Questions

Does the project topic need to be "hot"?

No, as long as it has a clear idea how it will be a useful computer security project, it's ok.

I can't come up with a good idea

Don't worry, you still have one week to refine your ideas to a topic proposal! Right now it's enough to have a general idea to find a group

The topics I come up with feel either too small or big

Finding "Goldilocks" topics can be hard. But both projects can be made to work – bigger ones by finding meaningful partial goals to reach during the course and smaller by finding applications that require more time.

Do we have a template for documentation

There is a template for the final report. You can use it also for intermediate returns or you can just start with a blank document

Your favorite question here!

A suitable answer

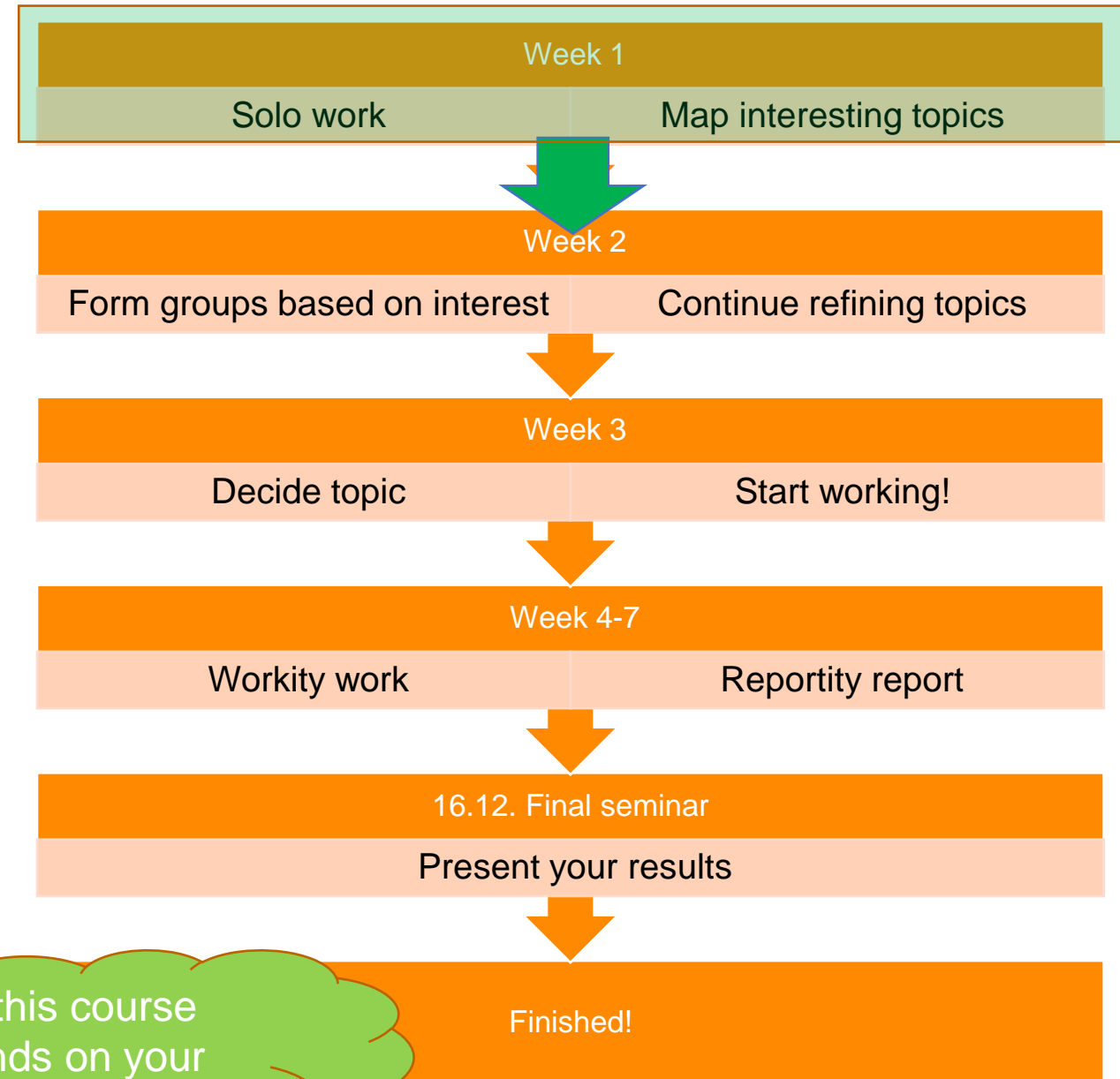
I really don't know what I would like to do

The easy and useful project is to do fuzzing for an open source project or a bug bounty program



Recap of course

- First, we want you to spend time reading and finding out about interesting projects, forming an idea on what you want to do
- **Second, you need to form groups of 2-5 students based on those interests**
- Thirdly, develop and evaluate project ideas
- Finally, select one of them and work on it, until the course ends!
- Obviously, you need to report both during the course, and at the end.
- 7 weeks, 20 - 30hours/ECTS, 5 ECTS
15 - 21 hours per week!



Yes, this course depends on your independent work



So, what was the task for last week again?



What you should do until next week?

1. Join the course Slack!
2. Create a document
3. Find many examples/projects!
4. For every interesting security project you find, write a short synopsis/notes to the document
5. Before the next lecture, return a PDF of the document in Moodle!
6. Before the next lecture, introduce yourself in course Slack #groups, and tell about your general interests in cyber security what would you like to work 100 – 150 hours on!

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- We will make introductions during the lecture
- If you're still missing a group, use Slack to connect with others!
- Please return your document in Moodle



And how will we be graded again?

- This course depends on your ability to contribute and to document the progress or the lack thereof with reasoning



How the project work will be graded

- Project work is hard to grade using points, as projects can be really different
- The works are NOT graded on a curve – everyone could get 4 or 5 for example
- The main concept is: we need to try and make the world (of security) a bit better place!
- If you can justify a positive impact, grade is already a 4!
- In some project topics, success is uncertain – especially in those cases documentation is your friend in grading!

Grade	Kuvaus	Description	Main questions?	Teacher reaction	Description
1	Välttävä	Passable	Do the students show enough work and effort to justify a grade?	Not what we were expecting, but very well...	No real attempt / unclear. Group cannot show sufficient work and effort to justify a grade.
2	Tyydyttävä	Satisfactory	Even if not much with regards to results, was the concept sound, and the reason for not reaching results justifiable?	Ok	A good idea to contribute, but finally implementation was unsuccessful level of maturity that can contribute to security
3	Hyvä	Good	A reasonable result given the topic and effort?	Looks good!	The project reached a level of maturity, but a real impact would've required more work.
4	Kitettävä	Laudable	How did you impact security?	Oh, you've done a lot of goodwork, very good job!	The group can justify, that they have contributed to security with their project.
5	Erinomainen	Excellent	How is the impact significant?	Very impressive! Tell me more about this...	The work has a significant impact.

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Plan for this week



Find yourself a group, 2-5 people, a common interest (Slack #project_groups)



Hold a group meeting, agree on schedules and working practices



Make a group document where you list different ideas that you considered. Return this in Moodle before next week.



Decide your topic proposal. You will present this in the next week lecture



Recap: project ideas

Tool projects

Contribute to open source security tools

Create your own tool?

Testing

Fuzzing

Test FOSS projects to improve security

Bug bounties?

Explorative

Deobfuscation, side-channel attacks, POC exploits, jailbreaking, etc.

Security games

Create a CTF environment and challenges / solve CTF's

Blue team / red team exercises

Create a lab for some Cybersecurity course?

Points to consider when choosing a project:

- Useful for security now or useful for skills later?
- Area where the group members want to develop in
- Estimate of workload and probability of success
- Fun and exciting?
- Level of ambition === impact in case of great success



Analysing project ideas



In your group report for this week, the questions from last week slides are still valid for evaluating project ideas:

- Level of technical difficulty?
- Required skills and how fast they can be learned?
- Is the topic open-ended or has a clear stopping point?
 - If first, how long until first relevant results?
 - If second, how long until finished?
- Technically hard end of the spectrum
 - Eg. Meltdown and Spectre (<https://meltdownattack.com>), or the X86 God Mode hack (https://www.youtube.com/watch?v=eSAF_qT_FY) often require an extensive theoretical and practical background plus immense amount of work!
- Impact if successful? **Note: is not the same as technical difficulty!**



IDEAS



I would like to invite everyone to introduce their ideas in turn,



Key questions:

What are your main interests in computer security?

Can you give an example of an inspiring project?

What would you hope to achieve in this project work?



In conclusion

- Find and form a group, work to find a suitable topic. You can make some prototyping work already! (can = probably should)
- Present your topic proposals in next week lecture, and return your documentation in Moodle.
- You will receive feedback for your topics from me during next weeks lecture, when you present the project topics



THANK YOU

See you next week with your topic proposals