

User Stories

COMPSCI5059 - Software Engineering

H. Gül Calikli, Ph.D.

Overview

- ☐ What a user story is
- ☐ User roles, user proxies, non-user roles
- ☐ Epics, constraints, backlogs
- ☐ Cost estimation
- ☐ Scheduling stories

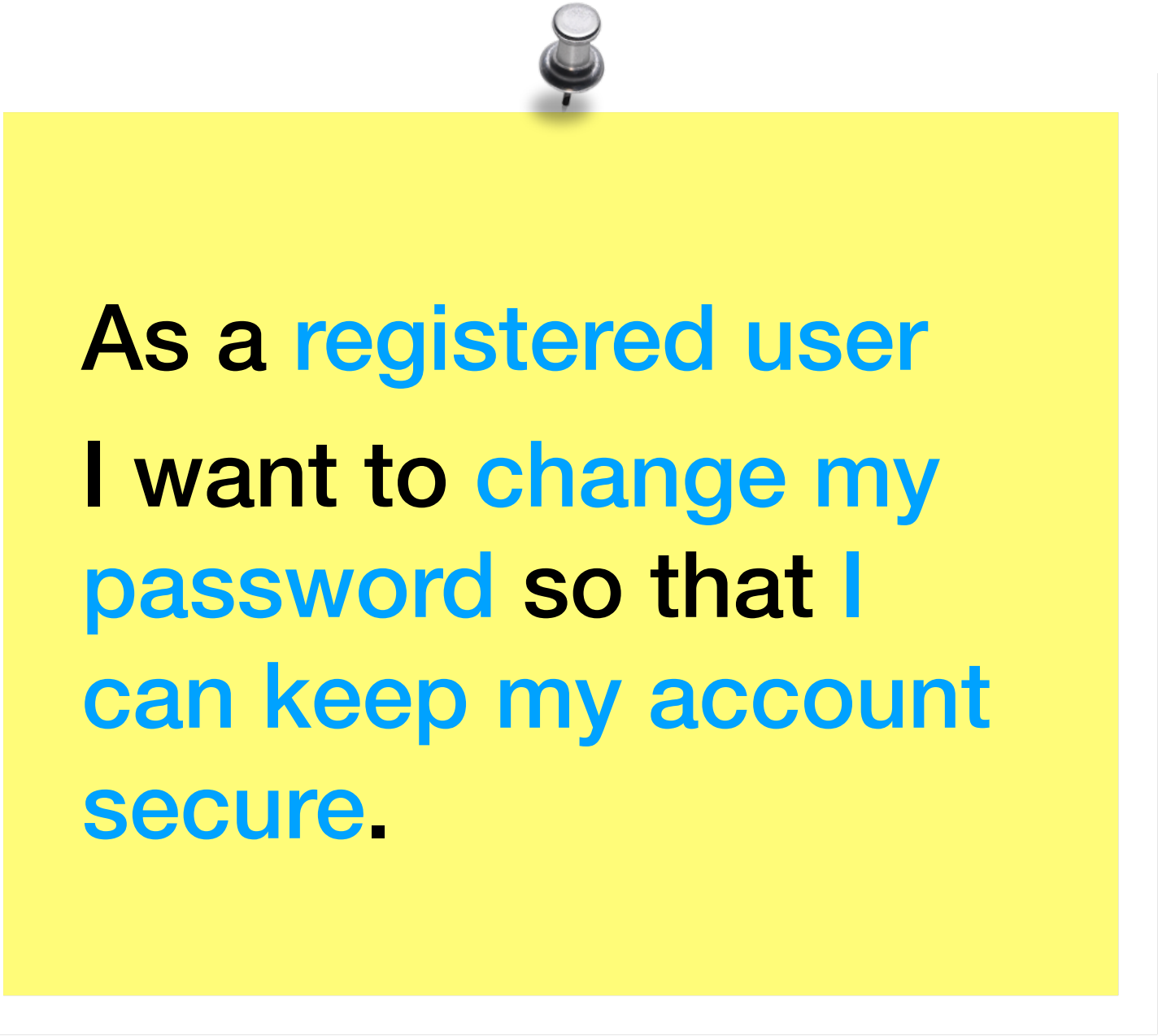
What is a User Story?

- Most modern software development approaches, including agile are based on customer requirements.
- However, it is hard to get customers to say what they want in precise terms.
- Therefore, user interactions with the software system are broken down into small user actions, which we call **user stories**.
- Each user story does one thing, making it easy for the users to describe each part of the interaction separately.

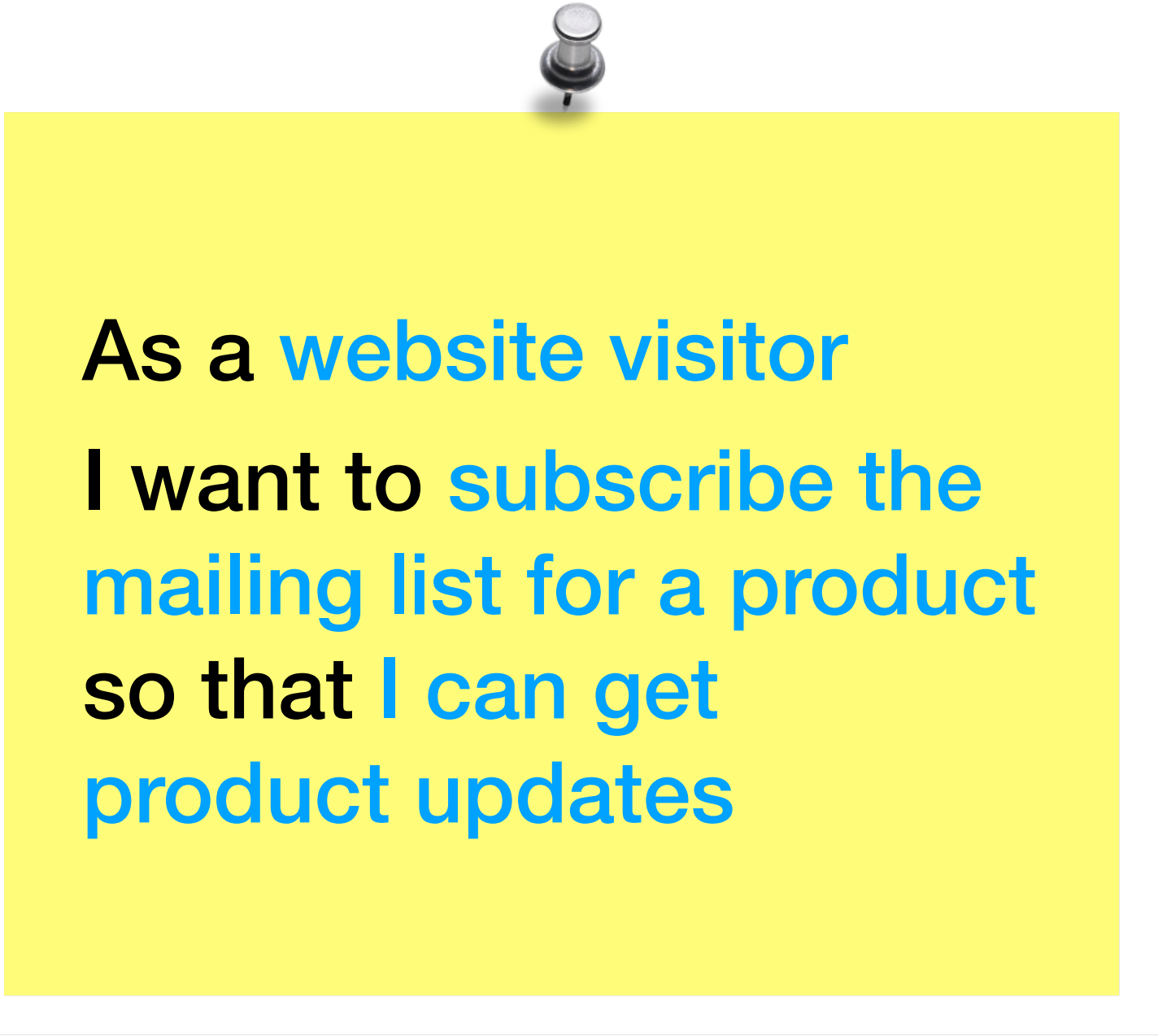
What is a User Story?

- In agile, is a short, informal, plain language description of what a user wants to do within a software product to gain something they find valuable.
- User stories typically follow the “user role—feature—benefit” pattern:
 - As a [description of user]
 - I want to [functionality]
 - so that [a benefit/value].

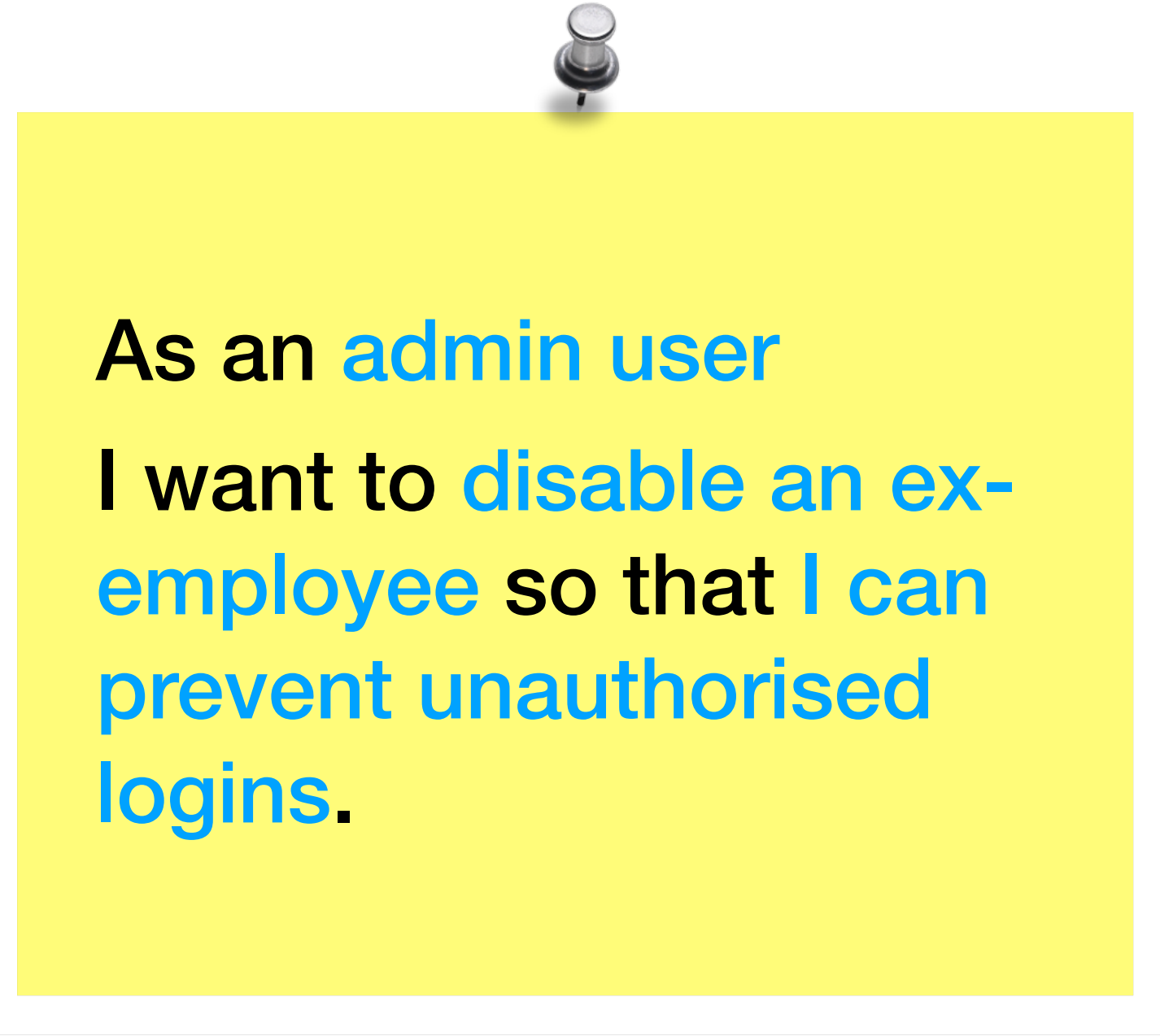
Some User Story Examples



As a **registered user**
I want to **change my password** so that I
can keep my account secure.



As a **website visitor**
I want to **subscribe the mailing list** for a product
so that I can get **product updates**



As an **admin user**
I want to **disable an ex-employee** so that I can
prevent unauthorised logins.

Guidance for Good User Stories

- A user story should be **closed**. At the end of a user story a **meaningful goal** should be **accomplished**.
- A user story should describe one interaction.
- Keep User Interface (UI) out of code.
 - Typically, the user interface involves several user stories.
 - Use a series of mockups (e.g., wireframes to design UIs).

Features of Good User Stories

- Independent of other stories to avoid confusion.
- Negotiable, a reminder to talk later.
- Valuable to users or customers but not developers.
- Estimable.
- Small but not too small
 - A matter of judgement and experience.
 - The right size to be able to make good estimates.
- Testable.
 - If a story can't be tested, how do we know when it is finished?

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INVEST criteria for
Good User Stories

More on User Stories

Tutorial video on User Stories

<https://www.youtube.com/watch?v=apOvF9NVguA>



User Story Cards - An Example

| Title: | Priority: | Estimate: |
|---|-----------|-----------|
| User Story: As a [description of user] I want [functionality] so that [benefit]. | | |
| <hr/> Acceptance Criteria: Given [how things begin] When [action taken] Then [outcome of taking action] | | |

User Story Cards - An Example

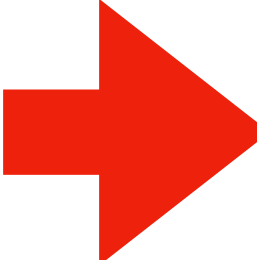
| Title: <i>"Notification to Prevent Overspending"</i> | | Priority: | Estimate: |
|---|--|-----------|-----------|
| User Story: As a credit card holder I want to receive a notification when I have less than £1000 in my account after making a big deposit so that I don't overspend. | | | |
| Acceptance Criteria: Given the user has opened an account and received a credit card When the user has less than £1000 after a bigger deposit Then the system notifies the user of their balance. | | | |

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We will talk about "Priority" and "Estimate" in the coming slides

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- ☐ Cost estimation
- ☐ Scheduling stories

User Roles

- The main purpose of a user role is to generate user stories.
 - Many different users can have the same role, and so are treated the same.
 - Example: an administrator.
- One user can have different roles.
 - Example: administrator and customer relations manager.

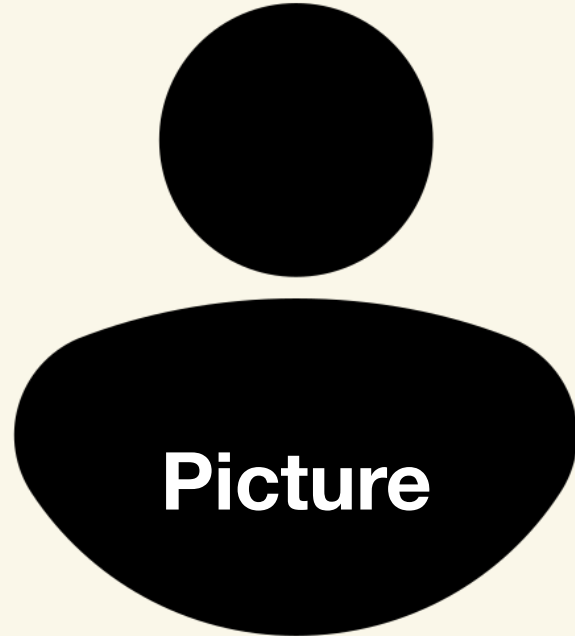
User Roles

- Each user role is recorded on an index card or its modern electronic equivalent.
 - The name of the user role
 - Frequency of use
 - Domain expertise
 - Computer expertise
 - Software expertise
 - Goals

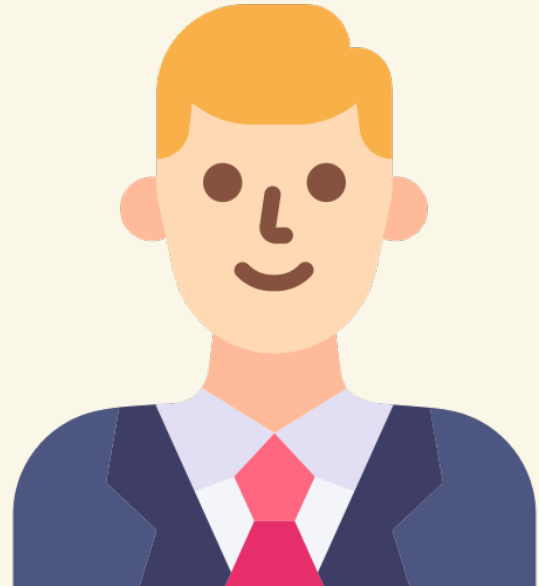
Personas

- Inventing a single person, or several persons, to represent a user role.
- They are given names, dates of birth etc.
- Often makes it easier to guess some details when implementing a user story using role modelling.
- Extreme personas can also be interesting.
 - Boundary cases are useful for testing and can reveal rare bugs.
 - Example: A user who wants to break the software system.

Personas - Example Template

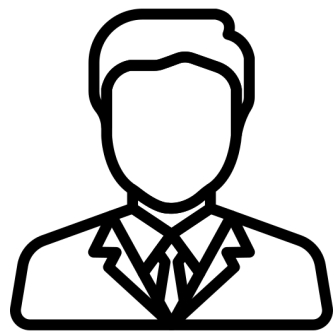
| Name | Details and Content |
|--|--|
|  | <ul style="list-style-type: none">• Tasks and responsibilities• Technology |
| Traits and characteristics | Goals |
| <ul style="list-style-type: none">• Age• Occupation• Location | <ul style="list-style-type: none">• Goal 1• Goal 2• Goal 3• ... |

Personas - Example Template

| Name | Details and Content |
|---|---|
|  John | <ul style="list-style-type: none">• John travels 4-8 times each month for work.• He travels same cities in specific countries.• He stays in the same hotel. |
| Traits and characteristics | Goals |
| <ul style="list-style-type: none">• 35 years old• Regional director• London, United Kingdom• Not very tech-savvy | <ul style="list-style-type: none">• To spend less time booking travel.• To narrow his options quickly. |

User Proxies

- Sometimes real users are not available but some other person from the organisation is. However, they might sometimes provide inaccurate data.



May not know what
is really needed to
get the job done.

Users' Manager

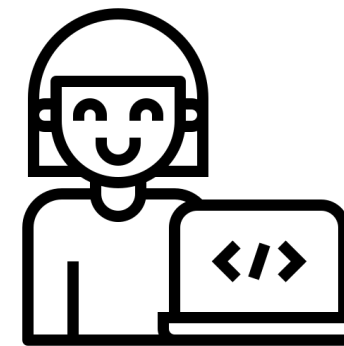
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Development Manager

Bad choice!
Because of
conflicting goals!

They might want to:

speed up development

get a cheap version of the software

Use inappropriate technology

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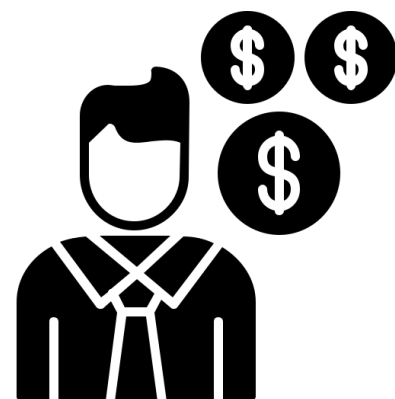
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Sales

Can be good if they lead you to the users.

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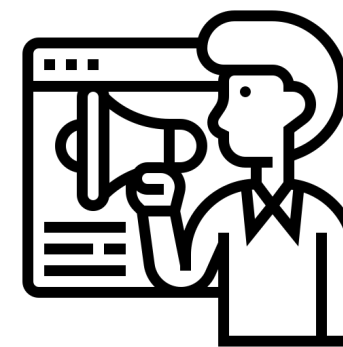
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Marketing People

Might try to convince the user use what their product offers.

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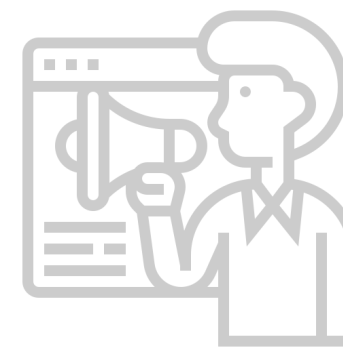
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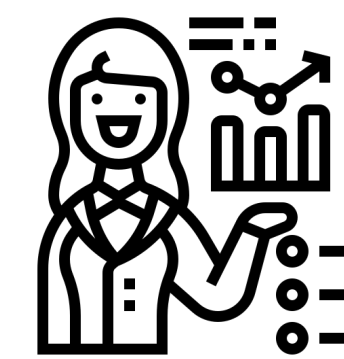
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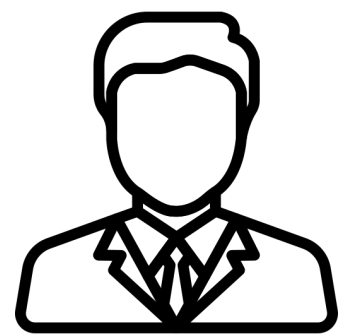


Business Analyst

Might prefer to think about a problem and solve it rather than researching what users want.

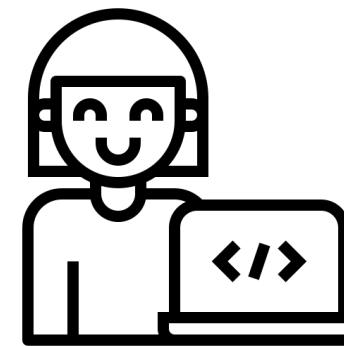
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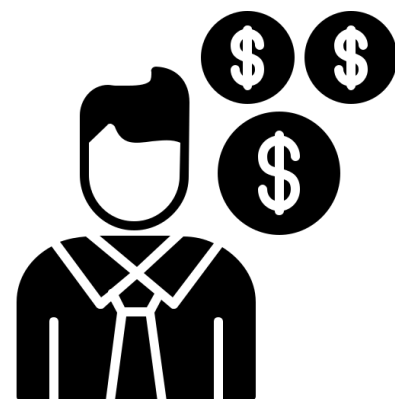
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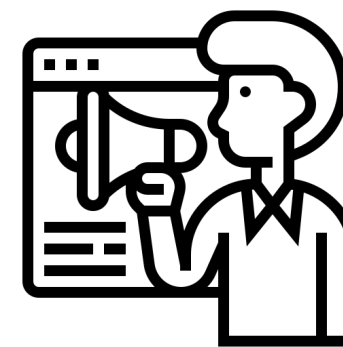
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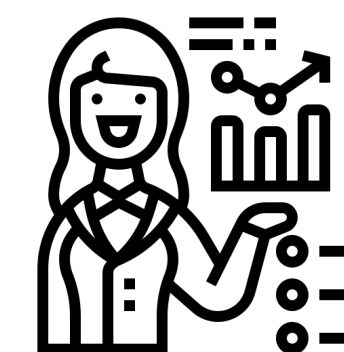
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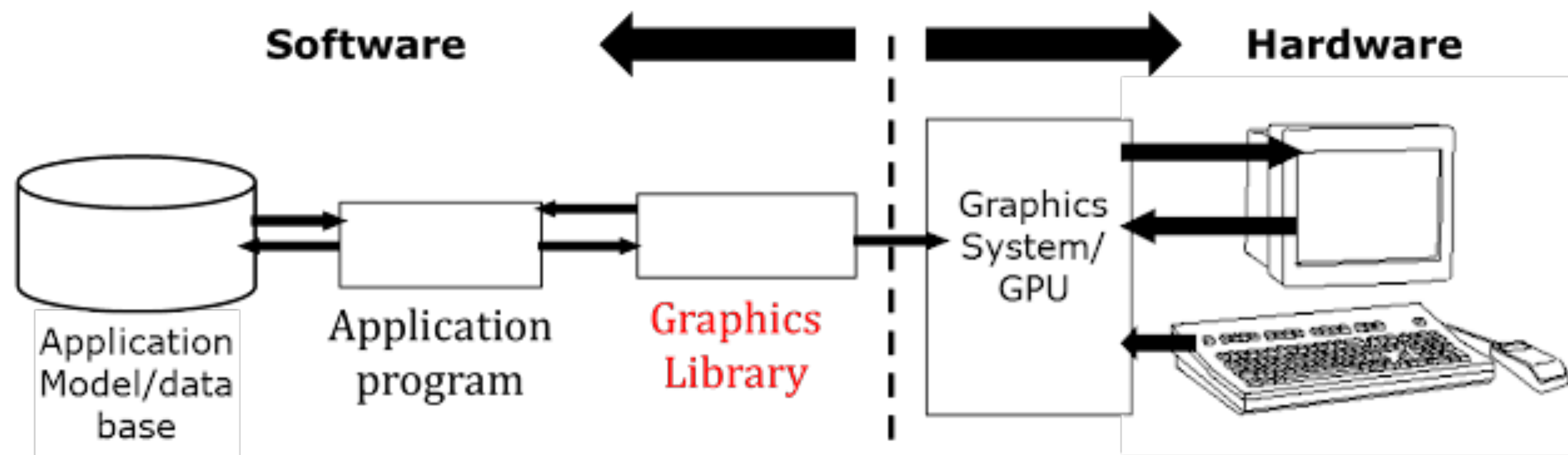


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Might prefer to think about a problem and solve it rather than researching what users want/

Non-user Roles

- Sometimes it is useful to have non-human system role
 - If another computer system will interact with our system.



Non-user Roles: Spikes

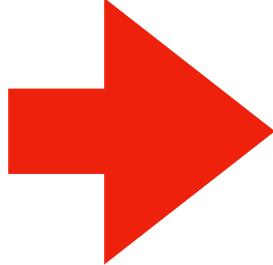
- It can be useful to have internal stories.
- Developers generate **spikes**.
- A **spike** is a story for gathering information (e.g., how much work will be required to work around a software issue?)
- Development team conducts a small experiment (e.g., a prototype) that is not part of the actual development but makes future development easier.

Example:



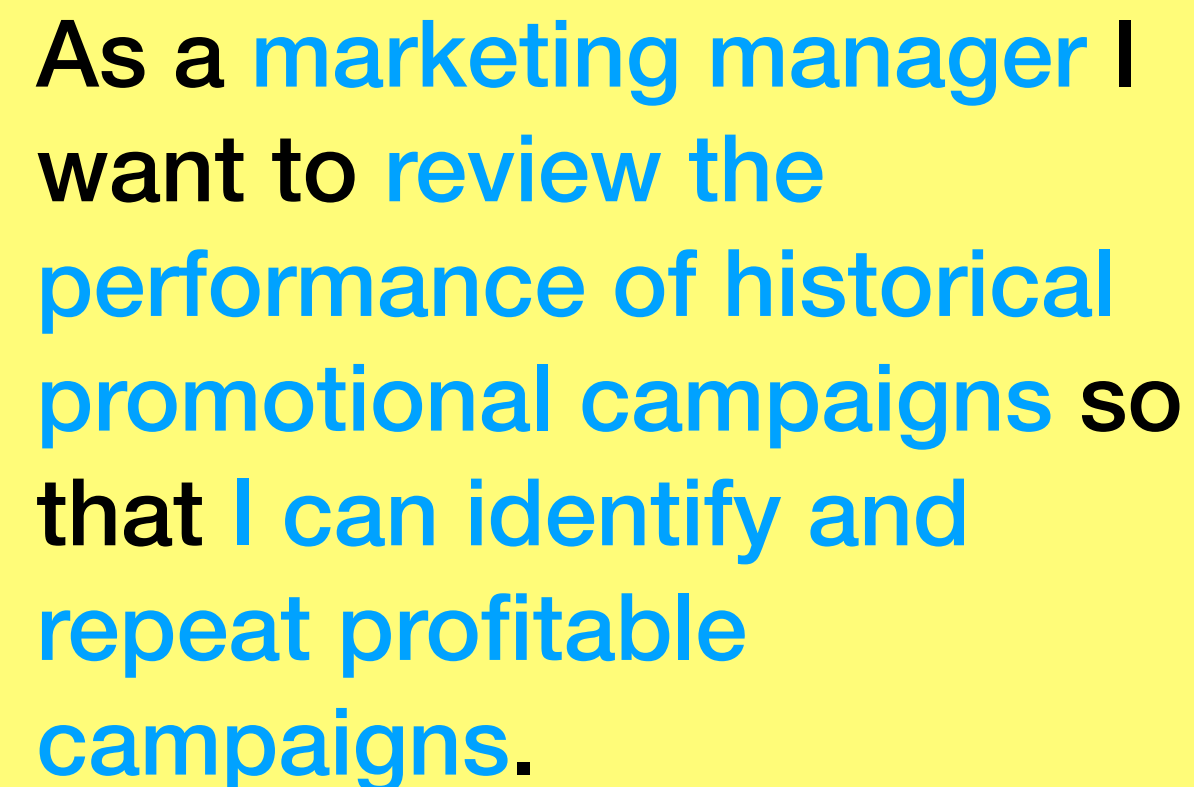
As a developer
I want to record all
login attempts.

Overview

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Epics

- An **epic** is a large user story with little detail.
- One aim of generating epics is to avoid making all analysis and design decisions at the start of the software development project.



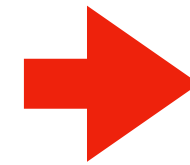
As a **marketing manager** I want to **review the performance of historical promotional campaigns** so that I can **identify and repeat profitable campaigns**.

Epics

- Further study is needed to split an epic into more manageable stories.
- Some epics are compound:
 - They are easy to split into smaller self-contained parts.
- Others are intrinsically complex, hence splitting them into small pieces is not obvious.

Epics

As a marketing manager I want to review the performance of historical promotional campaigns so that I can identify and repeat profitable campaigns.



As a marketing manager I want to select the timeframe to use when reviewing performance of historical promotional campaigns so that I can identify and repeat profitable campaigns.



As a marketing manager I want to select the type of campaigns to include (direct mail, TV, radio) when reviewing performance of the past so that I can identify and repeat profitable campaigns.



As a marketing manager I want to see information on direct mailings when reviewing performance of the past so that I can identify and repeat profitable campaigns.



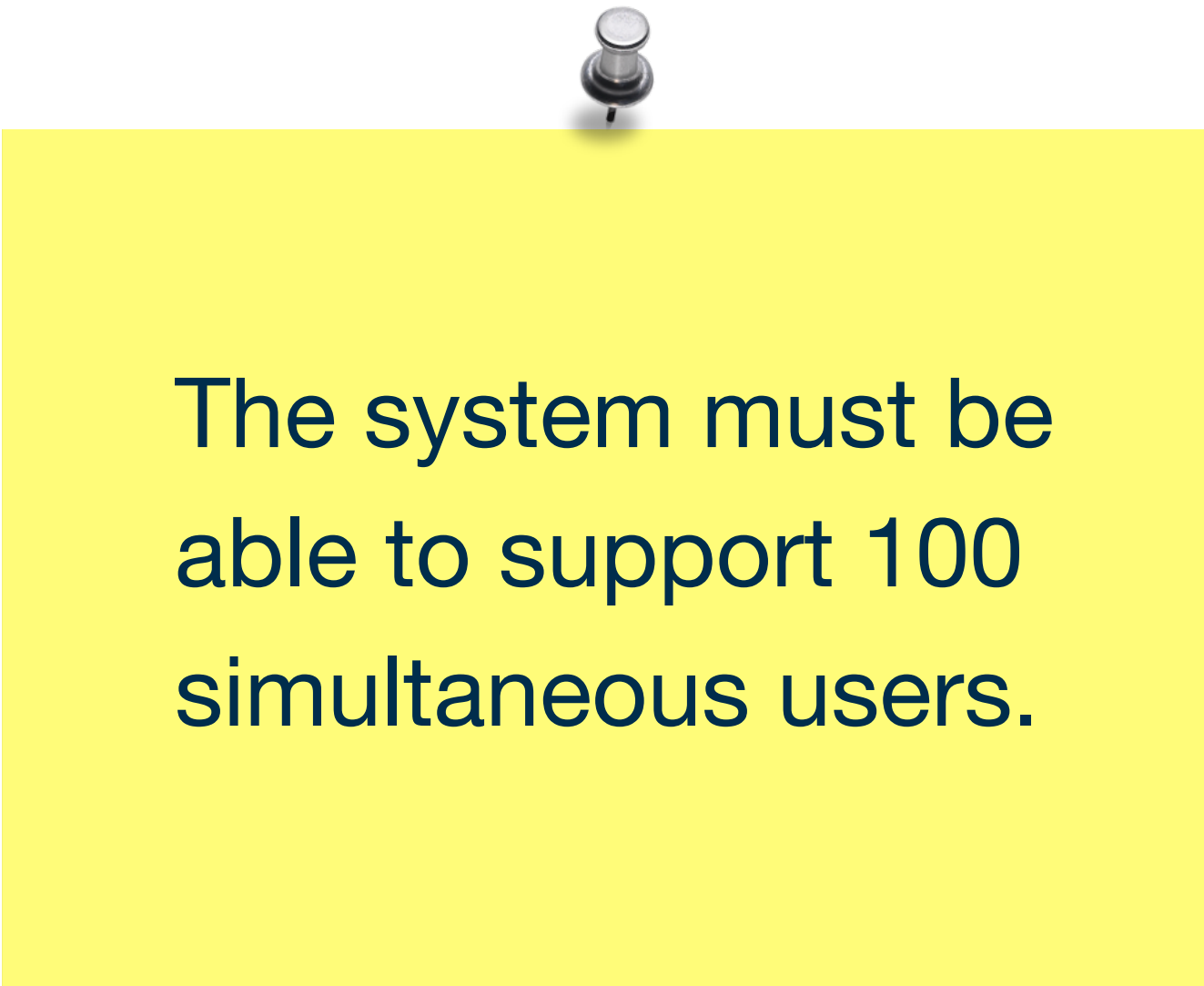
As a marketing manager I want to see information on TV ads when reviewing performance of the past so that I can identify and repeat profitable campaigns.



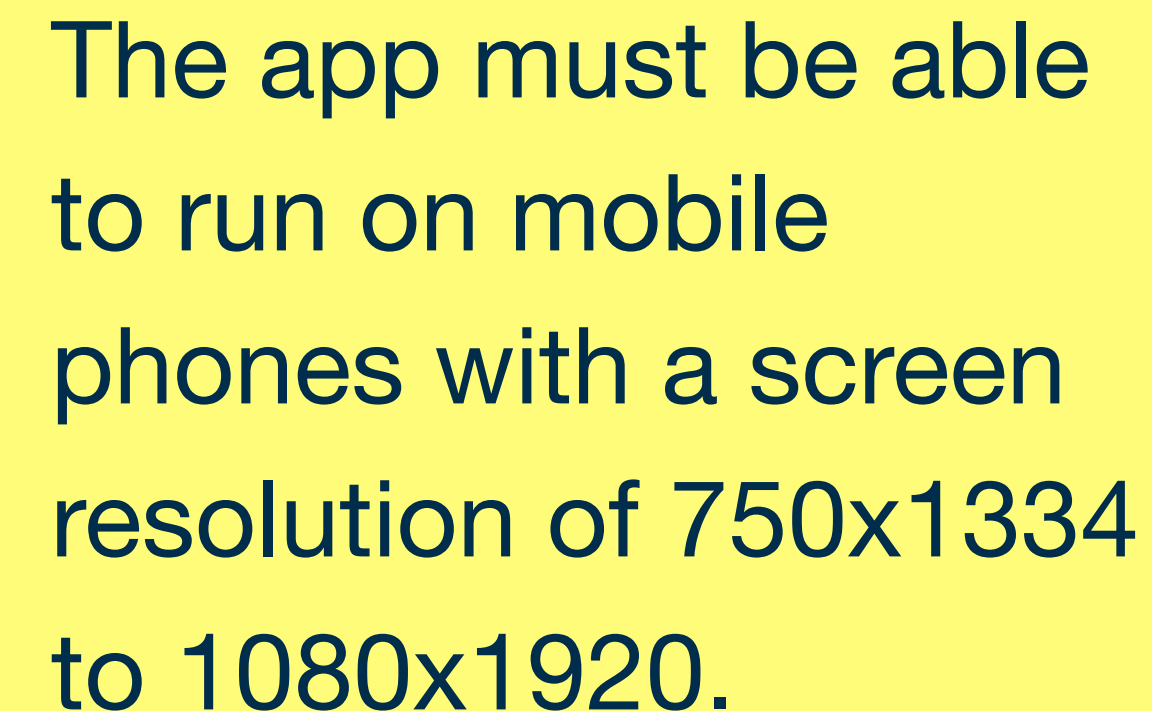
As a marketing manager I want to see information on radio ads when reviewing performance of the past so that I can identify and repeat profitable campaigns.

Non-functional Requirements (Constraints)

- Not everything can be expressed as a user story. These are nonfunctional requirements, which are expressed as **constraints** as follows:



The system must be able to support 100 simultaneous users.



The app must be able to run on mobile phones with a screen resolution of 750x1334 to 1080x1920.

Backlogs

- The collection of all stories, including user stories, epics, is called the **project backlog**.
- Originally all cards are pinned to a board in the development team office.
- Software tools can also be used, but having a board in the office can be useful.

Product Backlog

User login

Reset last
password

SSL enable

Lock
account
after three
attempts

...

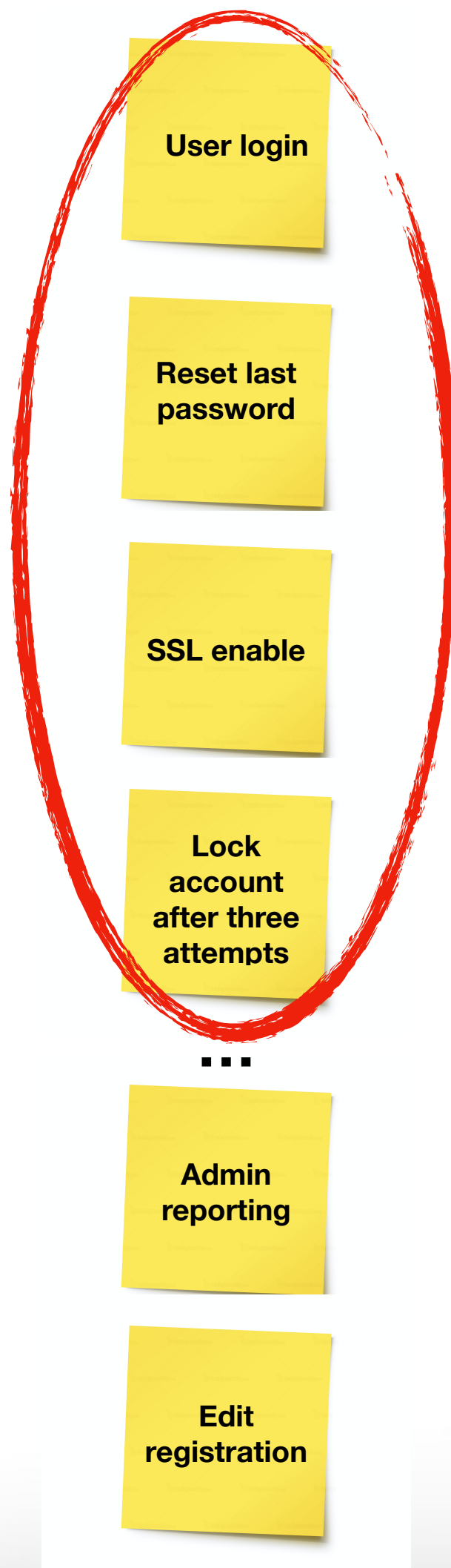
Admin
reporting

Edit
registration

Iteration Backlog

- Stories that have been assigned to an iteration form the **iteration backlog**.
 - Cards on the board (physical or electronic) are either in an iteration or have yet to be assigned to an iteration.
 - Completed stories are usually discarded at the end of the project.

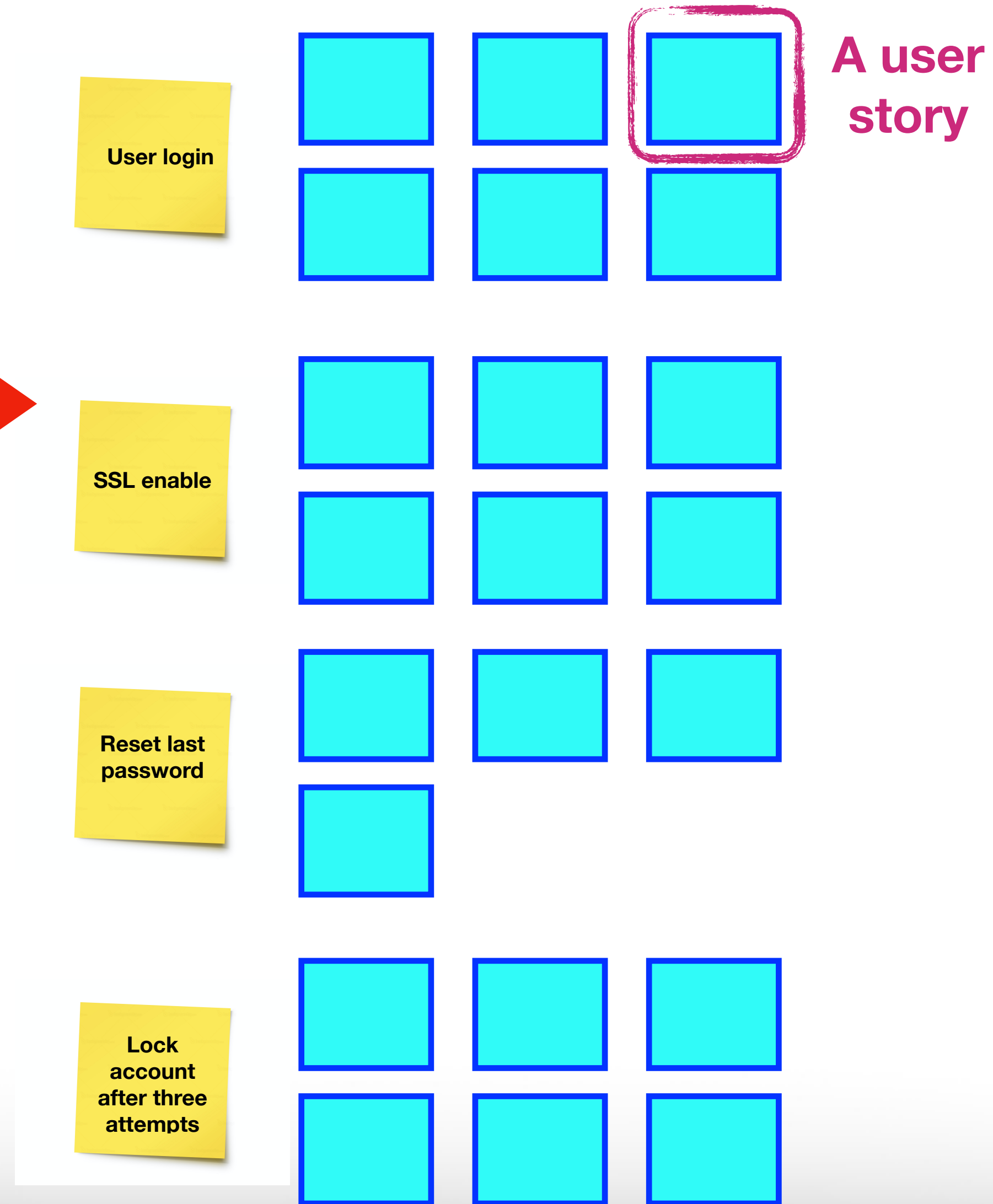
Product Backlog



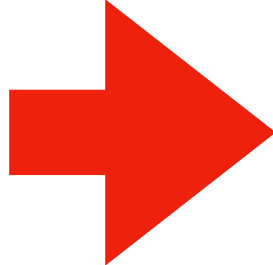
Selected
Product
Increment



Iteration Backlog



Overview

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- ☒ User roles, user proxies, non-user roles (Spikes)
- ☒ Epics, constraints, backlogs
-  ☐ Cost estimation
- ☐ Scheduling stories

User Story Effort

- The amount of effort required to complete a user story is measured in **story points (SP)**.
- A common definition of an SP is one ideal day (1 SP = 1 ideal day)
- **One ideal day** measures what can be achieved if the whole day was spent working on the project.

Effort Estimation

- Developers meet to estimate the length of each user story.
- For each user story:
 - each developer secretly writes an independent estimate of the number of **story points** required to complete that user story
 - developers reveal their estimates to each other
 - two developers with the longest and shortest estimates explain their reasoning
 - this process continues *iteratively* until the estimates converge

Effort Estimation

- One way of estimation is **planning poker**.

Example planning poker cards

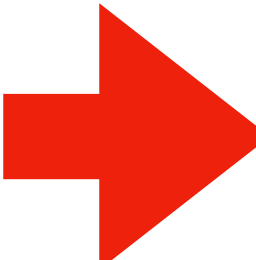


Tutorial video on Planning Poker:

<https://www.youtube.com/watch?v=gE7srp2BzoM>



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Story Priorities

There are usually 4 levels, called **MoSCoW**.

- **Must have.** Not every story can be a must have!
- **Should have.** Include unless things go bad.
- **Could have.** Include if things go well.
- **Would like to have.** Ideas for a future release.

Back to our User Story Cards Example

| Title: "Notification to Prevent Overspending" | Priority: | Estimate: |
|---|-----------|-----------|
| User Story: As a credit card holder I want to receive a notification when I have less than £1000 in my account after making a big deposit so that I don't overspend. | | |
| Acceptance Criteria: Given the user has opened an account and received a credit card When the user has less than £1000 after a bigger deposit Then the system notifies the user of their balance. | | |

Should have

1 Story Point

Now we can fill in "Priority" and Estimate" values!

Questions

(Please work on the following questions in your free time. Answers will be posted on Moodle next week)

1. What is a user story and how is it different from an epic or a spike?
2. What documentation goes with a single user story? Why is this good?
3. What features make good stories?
4. What are user roles, user proxies and personas? How are they used
5. What is a low fidelity prototype?
6. Why are acceptance tests important? Where are the test details recorded?
7. How are non-functional requirements documented?
8. What unit is the effort needed for each user story measured in? How is it estimated?