

# Computer Science Workshop



**Be a coder for the day.  
Solve problems.  
Build skills.**

# Lauriann's STEM Club



## Lauriann's STEM Club

[www.lauriannsstemclub.co.uk](http://www.lauriannsstemclub.co.uk)

T: +44 (0) 7506133159

Join us on: [Facebook](#) | [Instagram](#) | [Youtube](#)

- Founded by Lauriann who has a background in Civil Engineering
- Promoting STEM in Schools
- Encouraging more Women into STEM
- Based in the London Borough of Bexley

# Outline of the Session



About Me and My Job

Software Development in the Real World

DIY - Do It Yourself!



## **Build a FaceBook News Feed**

- Design
- Code
- Test
- Evaluate



Feedback

# About Me - Jackie

I work as a **Software Developer** at **Credit Suisse** in **Canary Wharf**

Credit Suisse is a **Global Bank**

- 48770 employees
- head office in **Zurich, Switzerland**
- offices in 50 countries including **China, India, Poland, Singapore, UK, USA**



# About My Job - Software Developer

Also called:

- Application Developer
- Software Engineer
- Programmer
- Coder

A Software Developer **build apps**.

In a bank like CS there are literally **thousands** of apps!

(last count, 26,478)



# About My Job - Software Developer

I've been working as a programmer for **20 years**.

I've worked on:



**Road Accidents** - An app which analyses the road accident information by the number of fatalities, finds the most dangerous sections of roads so that engineers can visit those sections of roads to see what can be done.



**Vehicle Tracking** - Apps which process messages from units installed on vehicles, detects accidents and automatically contacts 999 to send an ambulance to the vehicle's location.



**Energy Trading** - Oil/Gas/Airline Fuel - Apps which calculate the correct price of trades and highlight risks to the traders.



**Liquidity Management** - Apps which take the banks cash commitments, run a number of hypothetical scenarios to see if the bank will go bust.



**FX Trading** - Apps which analyse the trades which have already been done, calculating the correct price of the trades and highlight risk to the traders. App which checks if the price that was charged to clients was a fair price.

Python  
C#  
C++  
Java  
VBA  
SQL



# About My Job - Software Developer

*It's fun!*

*I work  
with ppl*

*I enjoy  
coding*



*Solve  
Problems*

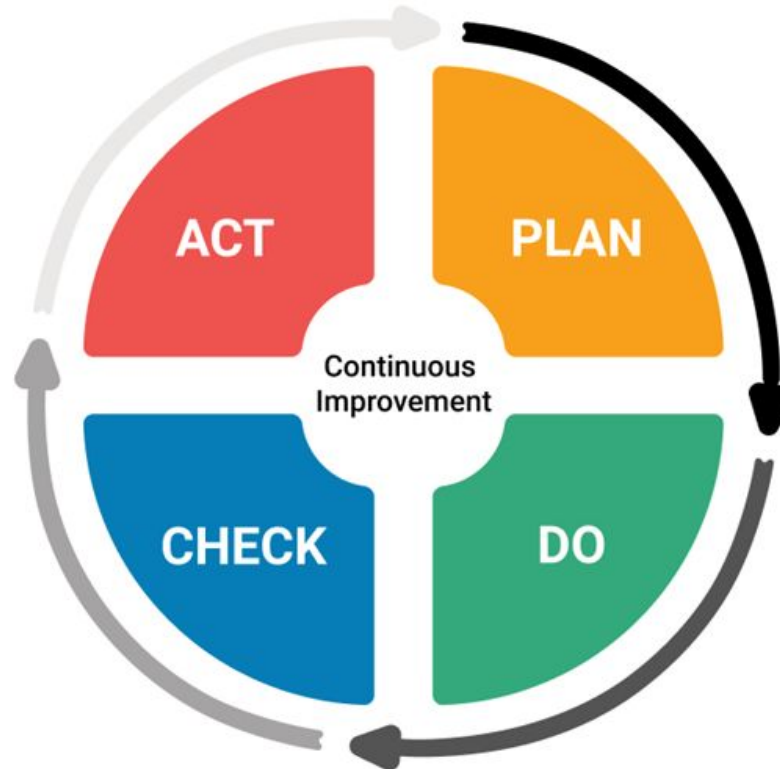
*Always  
Learning*

*Helping  
People*

# IRL => The PDCA Cycle - Continuous Improvement

Retrospective  
-How did it go?  
-Can we improve?

Requirements Analysis  
Design

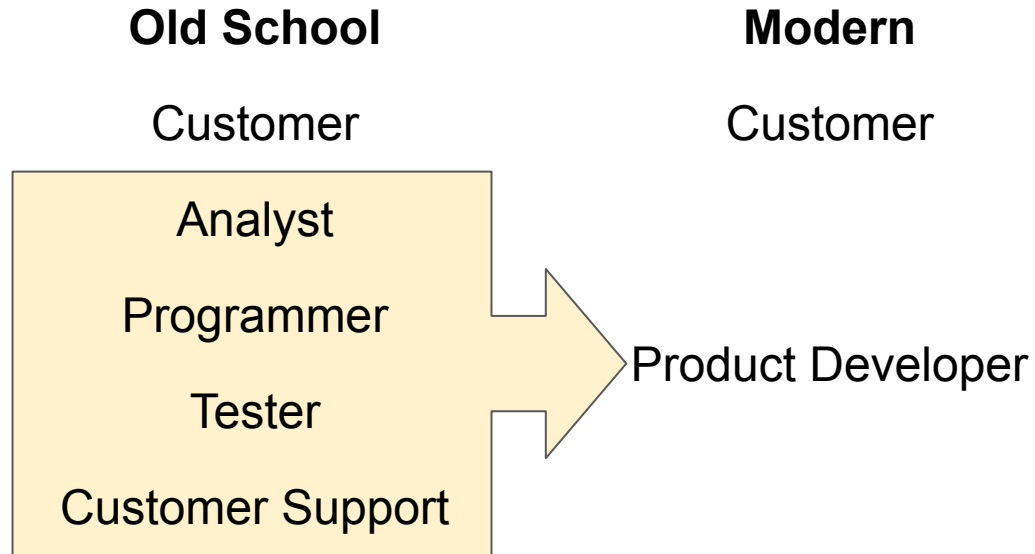


Build it!  
-Implementation  
-Development

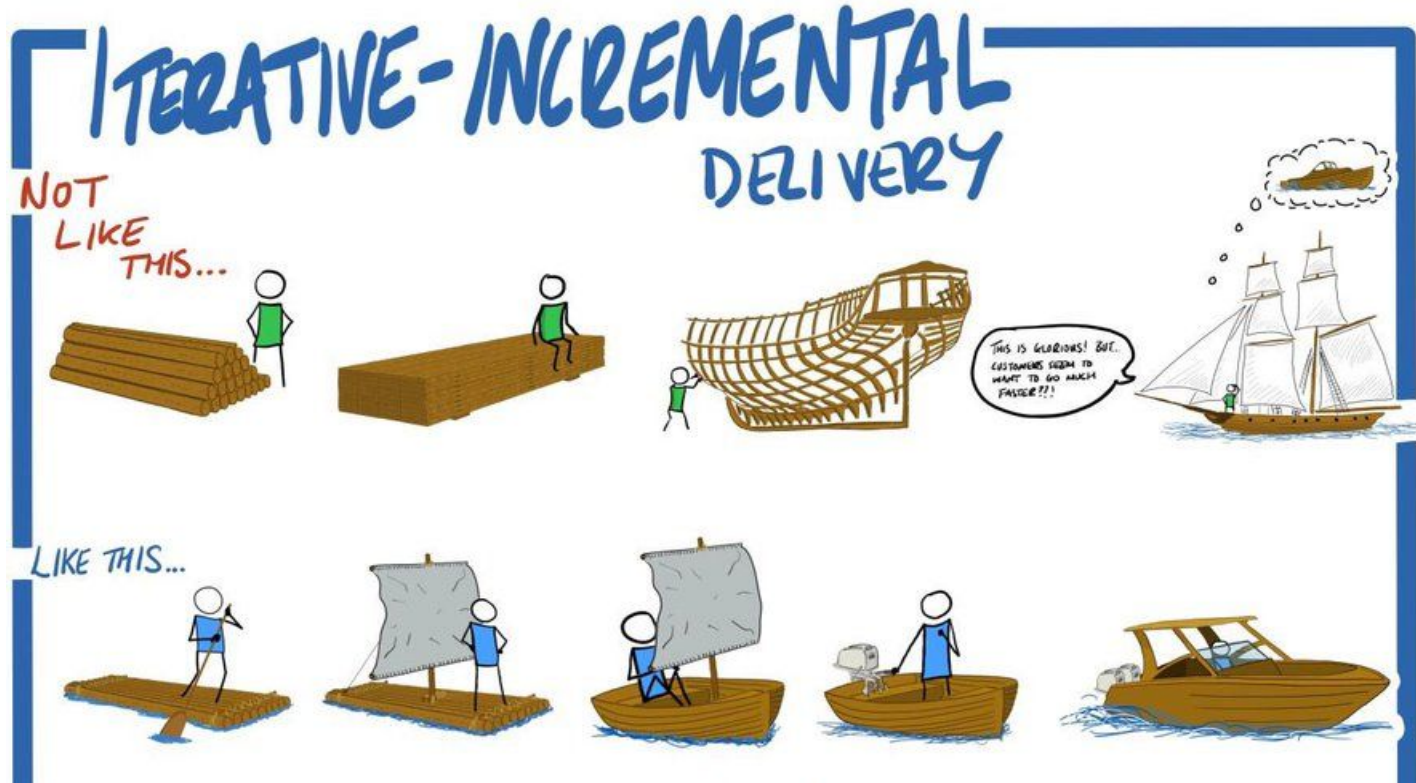
Test it!  
-Implementation  
-Development



# IRL => Software Development Roles



# IRL => Agile - Incremental Delivery



# Let's get started! Fakebook News Feed

=====FAKEBOOK NEWS FEED - TOP 20 =====

Muhammad [21:11] => Why me (5 likes)

Oliver [20:02] => I've finally finished my Maths assignment (1 likes)

Isla [19:38] => Why me (3 likes)

Isla [19:32] => Wish I hadn't gone to bed so late last night... (3 likes)

Noah [19:20] => Christmas cups are here... just saying! (1 likes)

Muhammad [19:08] => Is that ref serious??? (2 likes)

Noah [18:56] => No seriously, who is doing the official posters for the new Matrix movies? They're so bad! (1 likes)

Noah [18:50] => Christmas cups are here... just saying! (5 likes)

Muhammad [18:38] => Thank you my CheChe for the delicious chocolates! (2 likes)

Noah [18:20] => No seriously, who is doing the official posters for the new Matrix movies? They're so bad! (0 likes)

Noah [18:11] => Wish I hadn't gone to bed so late last night... (0 likes)

Muhammad [18:08] => Christmas cups are here... just saying! (2 likes)

Isla [18:05] => Any suggestions for dinner tonight? So bored with FOOD! (3 likes)

Noah [17:59] => BC81 tonight - awesome music, felt really pumped. (2 likes)

Muhammad [17:56] => Yay Friday! Can't wait to CHILL (2 likes)

Noah [17:29] => Did anyone catch the sunset this afternoon? Wow. Just Wow. (2 likes)

Noah [17:20] => Had a really tough day today (0 likes)

Isla [17:11] => Wish I hadn't gone to bed so late last night... (5 likes)

Noah [16:32] => Did anyone catch the sunset this afternoon? Wow. Just Wow. (2 likes)

=====



# Build a FakeBook News Feed

PLAN - 10 mins

You've been tasked with building a FakeBook News Feed.

*Brainstorm in groups of 4. Find a project space to display your ideas.*

## Task 1 - Design

Come up with a very high level design for your FakeBook system

What are the parts of your Facebook system?

What do you need to build?

Draw your ideas on a piece of paper.

## Task 2 - Requirements Analysis

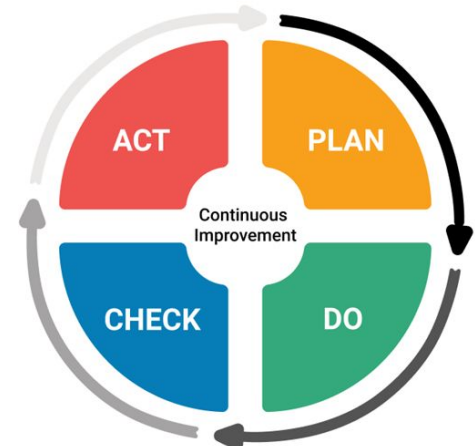
What tasks will you need to do to build the system?

What are the most important tasks? Which tasks will you do first?

Write your ideas down on post-it notes and arrange them in order.

## **Remember: Incremental Development**

First build the simplest thing that will work, then add more fancy features if you have time.



# PLAN - Design



PLAN

Users, Friends, Posts => News Feed

The system has a list of valid users

Each user will have a group of friends

A user can post a message which only his friends can see

A user needs to be able to read recent messages from his friends

TODO - Add a Picture



# PLAN - Requirements Analysis



PLAN

## Task 2 - Requirements Analysis

1. Build a List of Users
2. View the List of Users
3. Build a List of Friends
4. Check if a User is a Friend
5. Randomly Generate some Posts for Testing
6. Add Friends
7. Build a News Feed to view all Posts
8. Build a News Feed to view only Posts from your Friends
9. Build a News Feed to view only the last 20 Posts from your Friends
10. Add a Post
11. Like a Post
12. Like all Posts from a Friend

*\*Assume we are already logged in for a single user.*





# DO - Let's build it!

DO - 35 mins

*Fast forward a week and your team has already completed these features:*

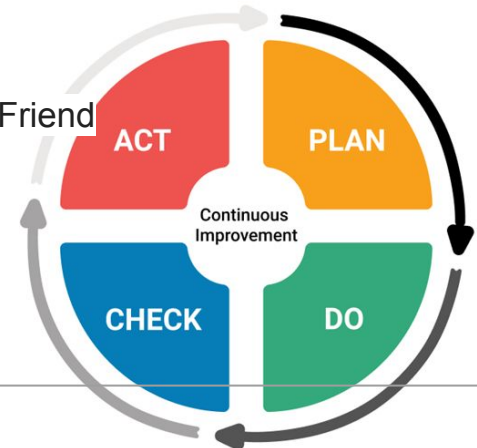
1. Build a List of Users - DONE
2. View the List of Users - DONE
3. Build a List of Friends - DONE
4. Check if a User is a Friend - DONE
5. Randomly Generate some Posts for Testing - DONE

*Test the features your team already wrote:*

```
print users()  
print friends()  
print(is_friend("Jackie"))  
print(POSTS)
```

*And then work on the remaining tasks:*

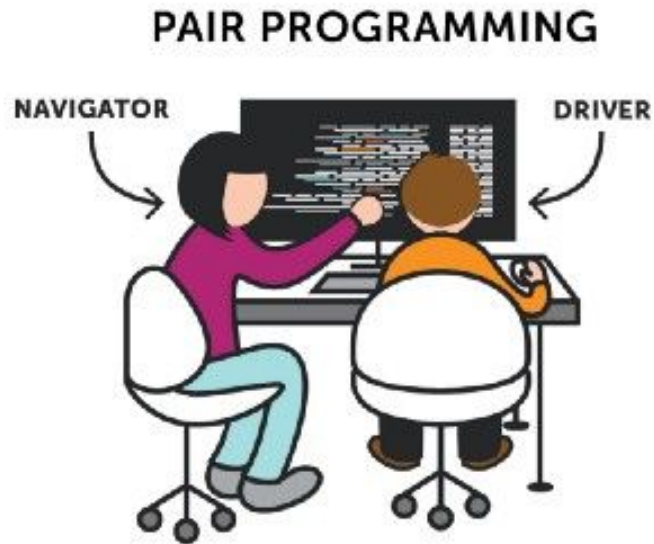
6. Add Friends
7. Build a News Feed to view all Posts
8. Build a News Feed to view only Posts from your Friends
9. Build a News Feed to view only the last 20 Posts from your Friends
10. Add a Post
11. Like a Post
12. Like all Posts from a Friend



*Work in pairs. Assume we are already logged in for a single user.*

# IRL => Pair Programming

DO



# Task 1 - Test Existing Features

DO

*Fast forward a week and your team has already completed these features:*

1. Build and Display a List of Users - DONE
2. Build and Display a List of Friends - DONE
3. Check if a User is a Friend - DONE
4. Randomly Generate some Posts for Testing - DONE

*Test the features your team already wrote:*

```
print_users()
```

```
print_friends()
```

```
print(is_friend("Jackie"))
```

```
print(POSTS)
```

## Task 2 - Add Friends

DO

You have no friends! How sad... Add Friends

- a) hard-code adding a friend
- b) ask the user to enter a friends name
- c) ask the user to enter 5 friends name

Hints:

```
add_friend('Noah')
```

```
some_input = input("Get input from user")
```

```
for i in range(0,5):
```

```
    <do something here>
```

## Task 2 - Add Friends



DO

```
#a)
add_friend('Noah')
add_friend('Isla')
add_friend('Adam')
add_friend('Muhammad')
add_friend('Oliver')
```

```
#b)
friend = input("Please choose a friend: ")
add_friend(friend)
```

```
#c)
print("You can choose 5 friends.")
for i in range(0,5):
    friend = input("Enter a friend's name: ")
    add_friend(friend)
```

```
#CHECK IF YOU HAVE ANY FRIENDS NOW?
print_friends()
```

```
print("Is Noah a friend?")
print(is_friend("Noah"))
```

```
print("Is Isla a friend?")
print(is_friend("Isla"))
```

## Task 3 - News Feed

DO

Your news feed is a mess! You are seeing messages from all users and there are too many to read. Filter News Feed.

- a) Build a News Feed to view all Posts
- b) Build a News Feed to view all Posts from a Friend
- c) Build a News Feed to view only Posts from your Friends
- d) Build a News Feed to view only the last 20 Posts from your Friends

```
for post in POSTS.values():  
    pretty print(post)
```



# Task 3 - News Feed



DO

```
#a)
print("===FAKEBOOK NEWS FEED===")
for post in POSTS.values():
    pretty_print(post)
print("=====")
```

```
#b)
print("===FAKEBOOK NEWS FEED - Noah ONLY===")
for post in POSTS.values():
    if post.name == "Noah":
        pretty_print(post)
print("=====")
```

```
#c)
print("===FAKEBOOK NEWS FEED - FRIENDS ONLY===")
for post in POSTS.values():
    if (is_friend(post.name)):
        pretty_print(post)
print("=====")

#d)
print("===FAKEBOOK NEWS FEED - FRIENDS ONLY - LAST 20
===)
post_count = 0
for post in POSTS.values():
    if is_friend(post.name) and (post_count < 20):
        pretty_print(post)
        post_count = post_count + 1
print("=====")
```

## Task 4 - Add and Like Posts

DO

Time to start interacting with the world!

Add a Post, and Like some Posts

- a) Add a Post
- b) Like a Post
- c) Like all Posts from a Friend

## Task 4 - Add and Like Posts



DO

```
#a) Add a Post
```

```
print("TASK 4a")
```

```
post_id = add_post("Noah", "Hey Guys Whatsuuuuuuuuuuupppppp")
```

```
print("Added a New Post by Noah with id:")
```

```
print(post_id)
```

```
print("=====FAKEBOOK NEWS FEED - Noah ONLY=====")
```

```
for post in POSTS.values():
```

```
    if post.name == "Noah":
```

```
        pretty_print(post)
```

```
print("=====")
```

## Task 4 - Add and Like Posts



DO

```
#b) Like a Post
```

```
print("TASK 4b")
```

```
print("Liking my new post...")
```

```
POSTS[post_id].likes += 100
```

```
print("=====FAKEBOOK NEWS FEED - Noah ONLY=====")
```

```
for post in POSTS.values():
```

```
    if post.name == "Noah":
```

```
        pretty_print(post)
```

```
print("=====")
```

## Task 4 - Add and Like Posts



DO

```
#c) Like all Posts from a Friend
```

```
print("TASK 4c")
```

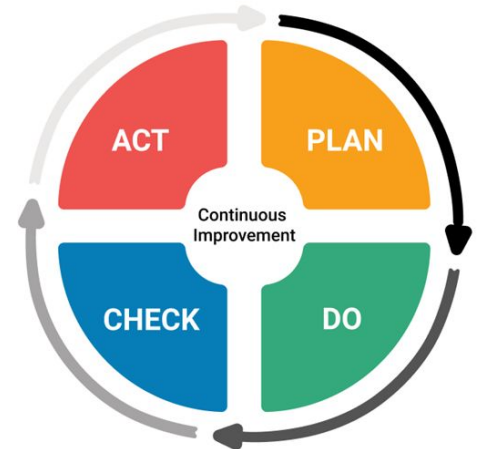
```
for post in POSTS.values():  
    if post.name == "Isla":  
        post.likes += 100
```

```
print("=====FAKEBOOK NEWS FEED - Isla ONLY=====")
```

```
for post in POSTS.values():  
    if post.name == "Isla":  
        pretty_print(post)
```

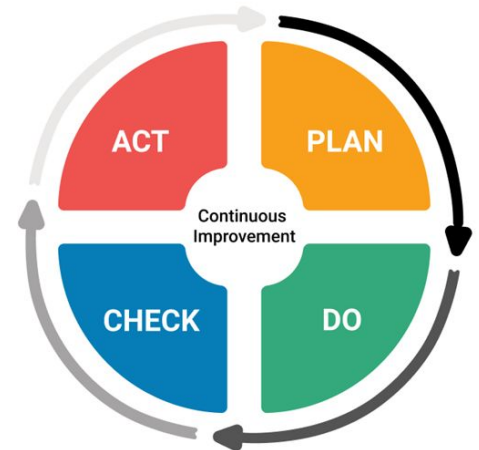
```
print("=====")
```

# CHECK





# ACT



## Session End - **Feedback forms**

10 minutes

