

# Gamification and Fake News: A Thriller about the Challenges of Developing an In-house Quiz App

Cristina Magder

UK Data Archive

UK Data Service

University of Essex

IASSIST 2018: Once Upon A Data Point:  
Sustaining Our Data Storytellers

30 May 2018

UK Data Service



University of Essex



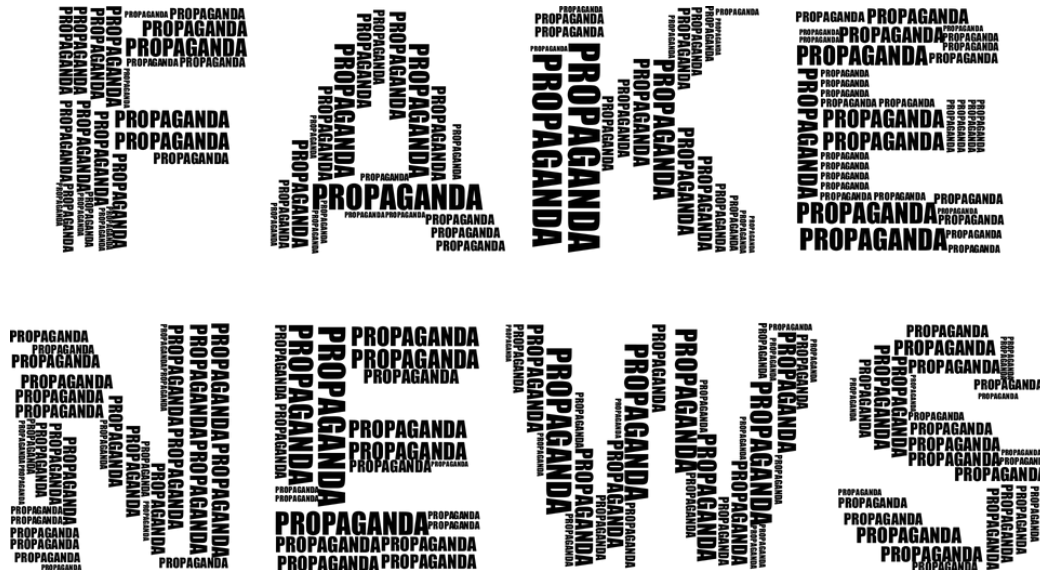
# Where did it all start?

- [#EULifeAppChallenge](#)  
developer contest
- Design by *Tomek Kwiatkowski*,  
a young developer from Poland
- Uses *openly\* available data* and  
demonstrates stats are fun
- Targeted at *14-18 year olds*



# Why did it all start?

- Majority' of Remainers switch to backing hard Brexit
- Numbers of smokers rocketed during 2017
- Sadiq Khan gets reprimanded by the Queen
- Pizzagate conspiracy theory



# Why did it all start?


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- What better way to combat Fake News than through *universal truths*?
- Why an app?
  - *Purposed-focused*
  - *Respectable security*
  - *Offline access*
  - *Efficient*
  - *Fun*



# The BackEnd

UKDS Data Quiz Project



Cristina Magder ▾  
System Admin

APP CONTENT


APP QUIZZES

HELP

Home > Quiz

NEW QUIZ

Showing 1 - 40 of 40 quizzes



Pets


Check your knowledge

🗑️

EDIT

RUN

QUESTIONS COUNT	FEATURED	MODIFICATION TIME
15	No	2017-09-21 21:40:48 Cristina Magder



Disability Awareness

Check your knowledge

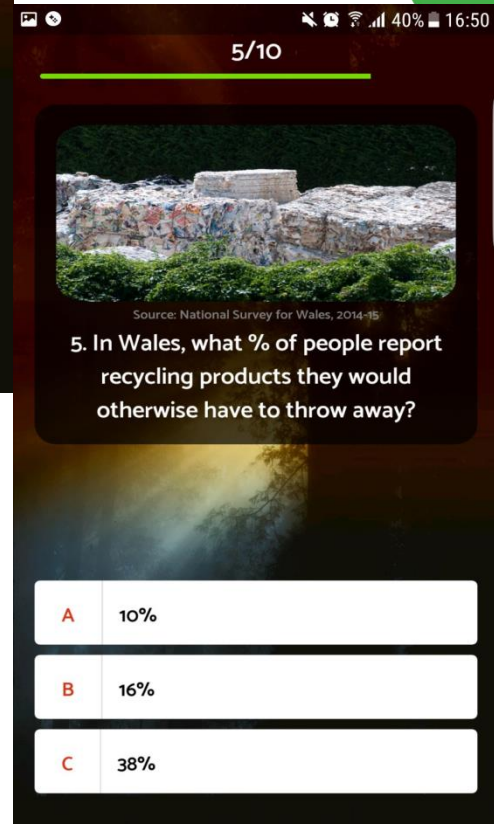
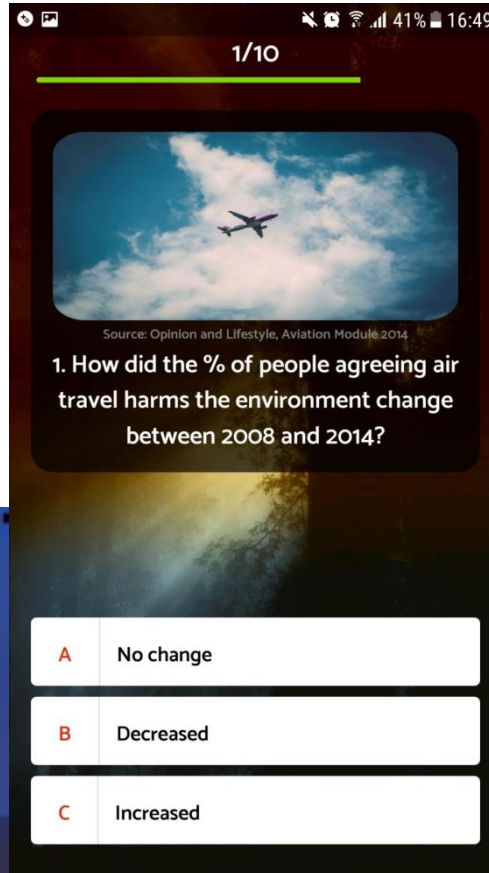
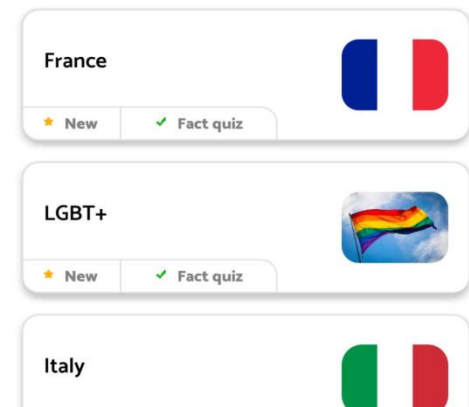
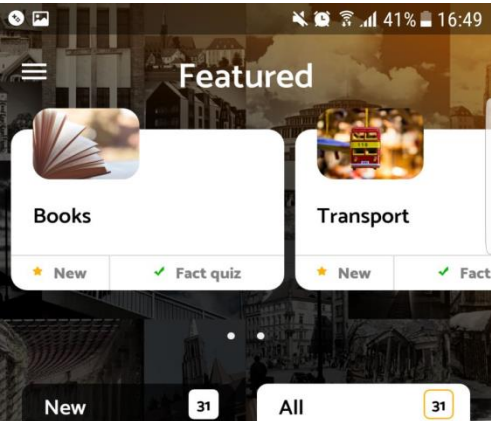
🗑️

EDIT

RUN

QUESTIONS COUNT	FEATURED	MODIFICATION TIME
15	No	2017-12-05 12:55:18

# The FrontEnd



# Project Management

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## Divide et Impera

- *Creative Power*
- *Tech Power*
- *Stats Power*

# Version Control

- *Track changes*
- *Single source of Truth*
- *Readily available*
- *Branching*

Name	Date modified	Type	Size
 Title V1.docx	15/05/2018 11:33	Microsoft Word Document	15 KB
 Title V2.docx	15/05/2018 11:34	Microsoft Word Document	15 KB
 Title V3.docx	15/05/2018 11:34	Microsoft Word Document	20 KB
 Title V4.docx	15/05/2018 11:35	Microsoft Word Document	49 KB
 Title V5.docx	15/05/2018 11:36	Microsoft Word Document	58 KB
 Title V6.docx	15/05/2018 11:36	Microsoft Word Document	53 KB
 Title V7.docx	15/05/2018 11:40	Microsoft Word Document	328 KB





# Version Control



UKDS/UKDS/ViewControllers/ResultViewController.swift MODIFIED Side-by-side diff View file Comment ...

...

109 109 let positionX = UIScreen.main.bounds.width / 2  
110 110 let positionY = CGFloat(200)  
111 111 print(positionX, positionY)  
112 - let startAngle = CGFloat(M\_PI \* 1.5)  
112 + let startAngle = CGFloat(Double.pi \* 1.5)  
113 113  
114 114 // bg circle  
115 - let circlePathBg = UIBezierPath(arcCenter: CGPoint(x: positionX, y: positionY), radius: CGFloat(self.circleRadius!), startAngle: CGFloat(0), endAngle:CGFloat(M\_PI \* 2), clockwise: true)  
115 + let circlePathBg = UIBezierPath(arcCenter: CGPoint(x: positionX, y: positionY), radius: CGFloat(self.circleRadius!), startAngle: CGFloat(0), endAngle:CGFloat(Double.pi \* 2), clockwise: true)  
116 116 let shapelayerBg = CAShapeLayer()  
117 117 shapelayerBg.path = circlePathBg.cgPath  
118 118 shapelayerBg.fillColor = UIColor(red: 0, green: 0, blue: 0, alpha: 0.75).CGColor

...

148 148 let positionX = UIScreen.main.bounds.width / 2  
149 149 let positionY = CGFloat(200)  
150 150  
151 - let startAngle = CGFloat(M\_PI \* 1.5)  
151 + let startAngle = CGFloat(Double.pi \* 1.5)  
152 152  
153 153 let circlePathStart = UIBezierPath(arcCenter: CGPoint(x: positionX, y: positionY), radius: CGFloat(self.circleRadius!), startAngle: CGFloat(startAngle), endAngle:CGFloat(self.getAngle(currentPercent))), c  
154 154 self.percentLayer!.path = circlePathStart.cgPath

...

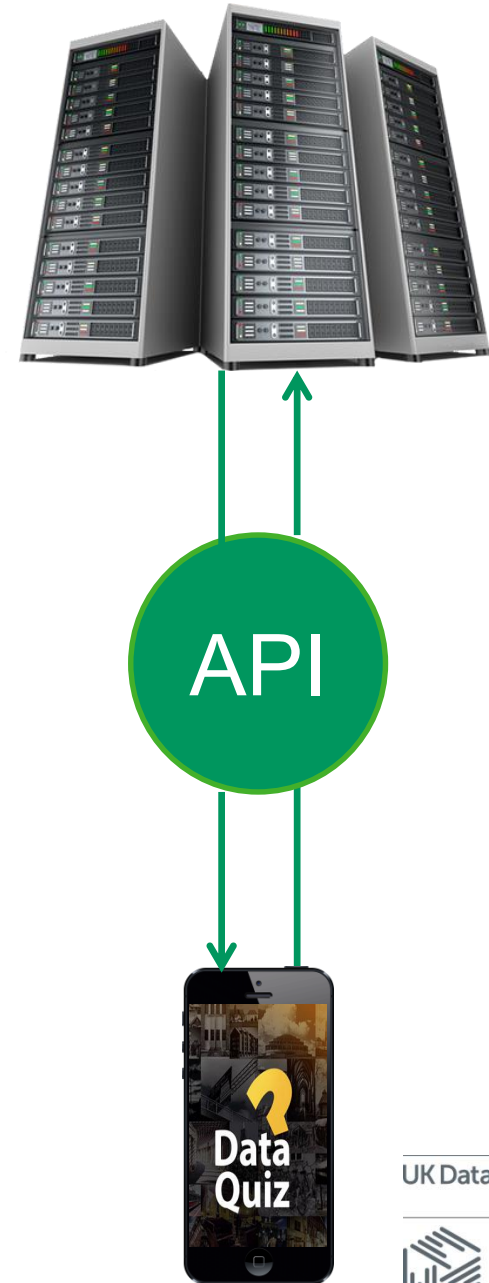
194 194 angle += 0.02  
195 195 }  
196 196  
197 - return M\_PI \* angle  
197 + return Double.pi \* angle  
198 198 }  
199 199  
200 200

...

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# API

- *API* (acronym for Application Programming Interface) is “a set of functions and procedures that allow the creation of applications which access the features or data of an operating system, application, or other service”



*OED Online*. Oxford University Press, March 2018. Web. 7 May 2018.

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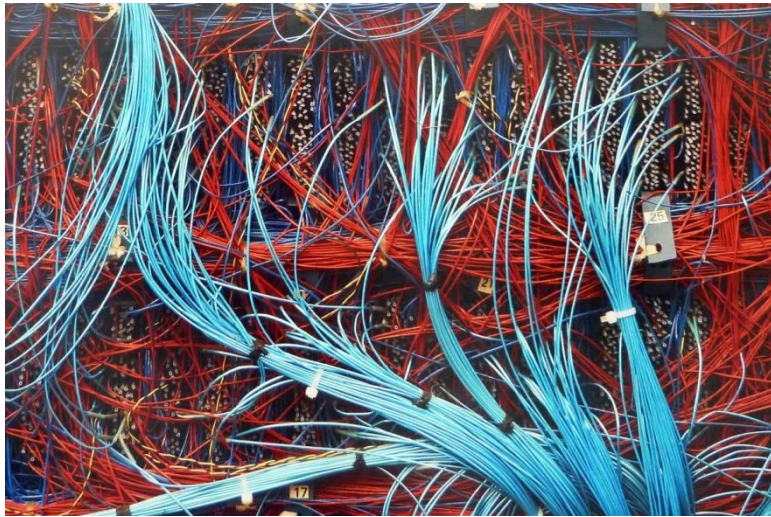
# API Hurdles

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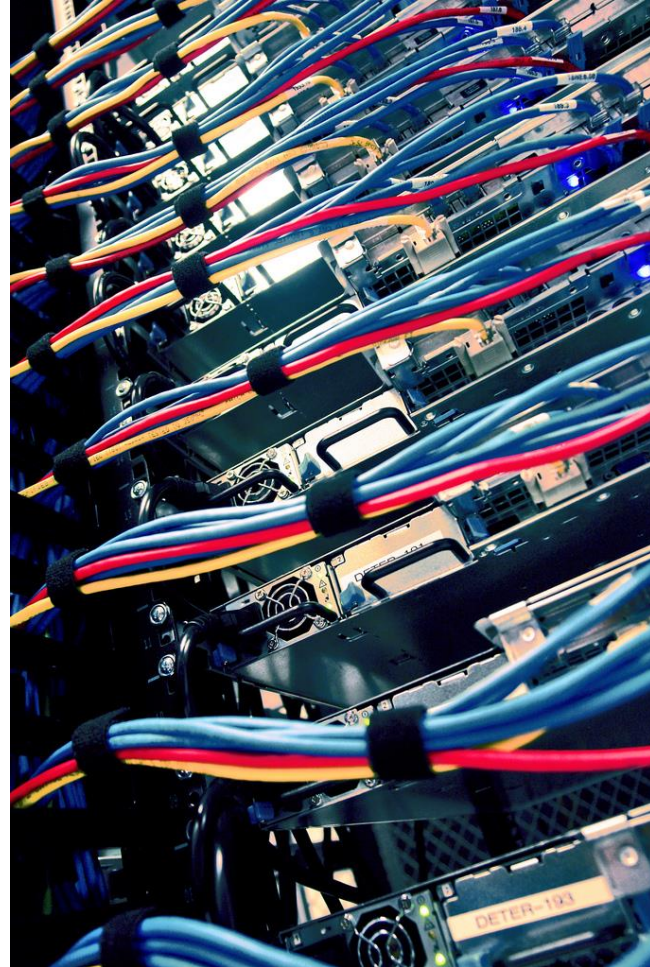
- Original API worked well but lacked suitable endpoints
  - Either provides too much data (Over fetching) or too little data (Under fetching)
    - *Over Fetching* wastes data usage and space
    - *Under Fetching* wastes time, as more API requests have to be sent



What we've got:



What we want:



# RESTful API

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A *RESTful API* is an application program interface (API) that uses HTTP requests to *GET, PUT, POST* and *DELETE* data.

A RESTful API breaks down a transaction to create a series of small modules.

- *Cleaner*
- *Easier*
- *Ease for synchronization*

# Databases

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- *Core tool* of the API
- Database originally in *MySQL*
  - was based on a previous project (part of something bigger)
  - a little rough around the edges
- Remade to work with *MsSQL* (Microsoft SQL Server)
  - fresh structure
  - standardized formats, fields and names
  - formalized table relationships





# Before

**ukds.users\_avatar**

- id : int(11)
- # user\_id : int(11)
- @ filename : varchar(255)

**ukds.questions\_removed**

- id : int(11)
- # quizzes\_id : int(11)

**ukds.daily\_inspiration**

- id : int(11)
- @ content : text

**ukds.schedule**

- id : int(11)
- # user\_id : int(11)
- @ date : datetime
- @ event : text

**ukds.persons**

- id : int(11)
- @ person\_id : varchar(128)
- @ name : varchar(255)
- @ age : varchar(255)
- @ gender : varchar(255)
- @ details : text
- @ interest : text
- @ languages : varchar(255)
- @ gender\_preferences : text
- @ preferences\_min\_age : varchar(255)
- @ preferences\_max\_age : varchar(255)
- @ photo\_filename : varchar(255)

**ukds.note\_ranges**

- id : int(11)
- # note\_id : int(11)
- # percent\_from : int(11)
- # percent\_to : int(11)
- @ image : varchar(255)
- @ title : varchar(255)
- @ description : text

**ukds.notes**

- id : int(11)
- # quiz\_id : int(11)

**ukds.questions**

- id : int(11)
- # quizzes\_id : int(11)
- # user\_id\_modified : int(11)
- # ordera : int(11)
- # visible : tinyint(4)
- @ type : varchar(255)
- @ question : text
- @ question\_image1 : varchar(255)
- @ explanation : text
- @ answer1 : varchar(255)
- @ answer2 : varchar(255)
- @ answer3 : varchar(255)
- @ answer\_image1 : varchar(255)
- @ answer\_image2 : varchar(255)
- @ answer\_image3 : varchar(255)
- @ answer\_image4 : varchar(255)
- @ multi\_answers : text
- # answer : int(11)
- @ text\_answer : text
- @ comments : text
- @ rate1 : varchar(255)
- @ rate2 : varchar(255)
- @ rate3 : varchar(255)
- @ rate4 : varchar(255)
- @ date\_modified : datetime

**ukds.teachers**

- id : int(11)
- # school\_id : int(11)
- @ teacher\_email : varchar(127)

**ukds.teacher\_history**

- id : int(11)
- # quiz\_id : int(11)
- @ teacher\_id : varchar(60)
- @ session\_symbol : varchar(8)
- @ json\_data : text
- # is\_class : tinyint(1)
- @ date\_created : datetime

**ukds.categories**

- id : int(11)
- # ordera : int(11)
- # visible : tinyint(4)
- # user\_id : int(11)
- @ title : varchar(255)
- @ icon : varchar(255)
- @ date\_modify : datetime
- @ shop\_guid : varchar(128)

**ukds.mentors**

- id : int(11)
- # hackathon\_id : int(11)
- @ mentor\_email : varchar(255)

**ukds.answers**

- id : int(11)
- # user\_id : int(11)
- @ user\_nick : varchar(255)
- @ quiz\_name : varchar(255)
- @ quiz\_html\_answers : text
- @ date\_created : datetime

**ukds.classes**

- id : int(11)
- # teacher\_id : int(11)
- @ class\_name : varchar(127)

**ukds.dynamic\_pages**

- id : int(11)
- # user\_id : int(11)
- @ name : varchar(255)
- @ title : varchar(255)
- @ text : text
- @ deadline : datetime

**ukds.quizes**

- id : int(11)
- # categories\_id : int(11)
- # user\_id : int(11)
- # user\_id\_modified : int(11)
- # ordera : int(11)
- # visible : tinyint(4)
- @ title : varchar(255)
- @ intro : text
- @ type : varchar(255)
- @ icon : varchar(255)
- @ background\_photo : varchar(255)
- # is\_featured : int(11)
- # is\_survey : int(11)
- # is\_publish : int(11)
- # is\_random : int(11)
- @ date\_modify : datetime
- @ embed\_code : varchar(20)
- # time\_limit\_mode : tinyint(4)
- # time\_limit\_secs : int(11)
- # questions\_count : int(11)
- @ shop\_guid : varchar(128)
- @ link\_shop\_guid : varchar(128)

**ukds.classes\_entry**

- id : int(11)
- # classes\_id : int(11)
- @ email : varchar(128)

**ukds.stats\_quiz**

- id : int(11)
- # quiz\_id : int(11)
- # stats\_quiz\_users\_id : int(11)
- # is\_starting : tinyint(4)
- # is\_ending : tinyint(4)
- # teacher\_mode : tinyint(4)
- # teacher\_history\_id : int(11)
- @ date\_created : datetime

**ukds.stats\_quiz\_questions**

- id : int(11)
- # stats\_quiz\_id : int(11)
- # question\_id : int(11)
- # is\_correct : tinyint(4)

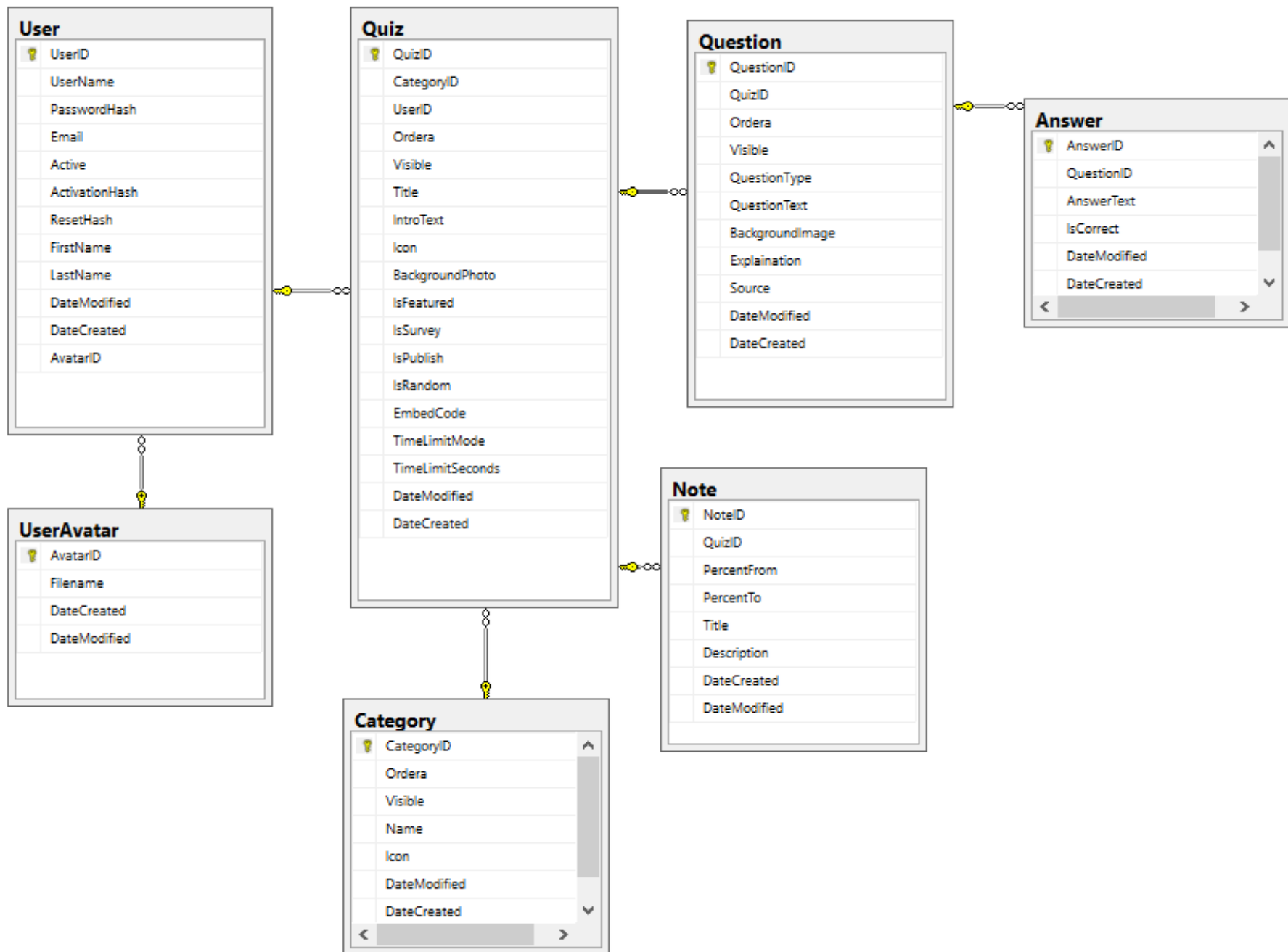
**ukds.stats\_quiz\_users**

- id : int(11)
- @ email : varchar(255)

**ukds.users**

- user\_id : int(11)
- user\_name : varchar(64)
- @ user\_password\_hash : varchar(255)
- user\_email : varchar(64)
- # user\_active : tinyint(1)
- @ user\_activation\_hash : varchar(40)
- @ user\_password\_reset\_hash : char(40)
- # user\_password\_reset\_timestamp : bigint(20)
- @ user\_rememberme\_token : varchar(64)
- # user\_failed\_logins : tinyint(1)
- # user\_last\_failed\_login : int(10)
- @ user\_registration\_datetime : datetime
- @ user\_registration\_ip : varchar(39)
- @ user\_who\_is : varchar(20)
- @ user\_nickname : varchar(255)
- @ user\_surname : varchar(128)
- @ user\_note : text
- @ user\_contact\_email : varchar(128)
- @ user\_contact\_phone : varchar(128)
- @ parents\_contact\_email : varchar(128)
- @ parents\_contact\_phone : varchar(128)

# After





# Publishing Apps

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*Varies by platform*

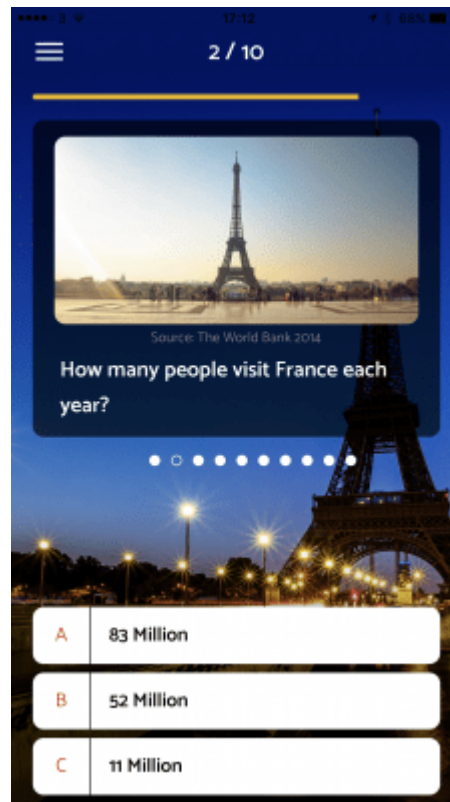


- Google Play store is very permissive



- Apple App store is very restrictive
  - Apple requires a D-U-N-S Number to set up an organization's account
  - communication issue between parties delays publishing

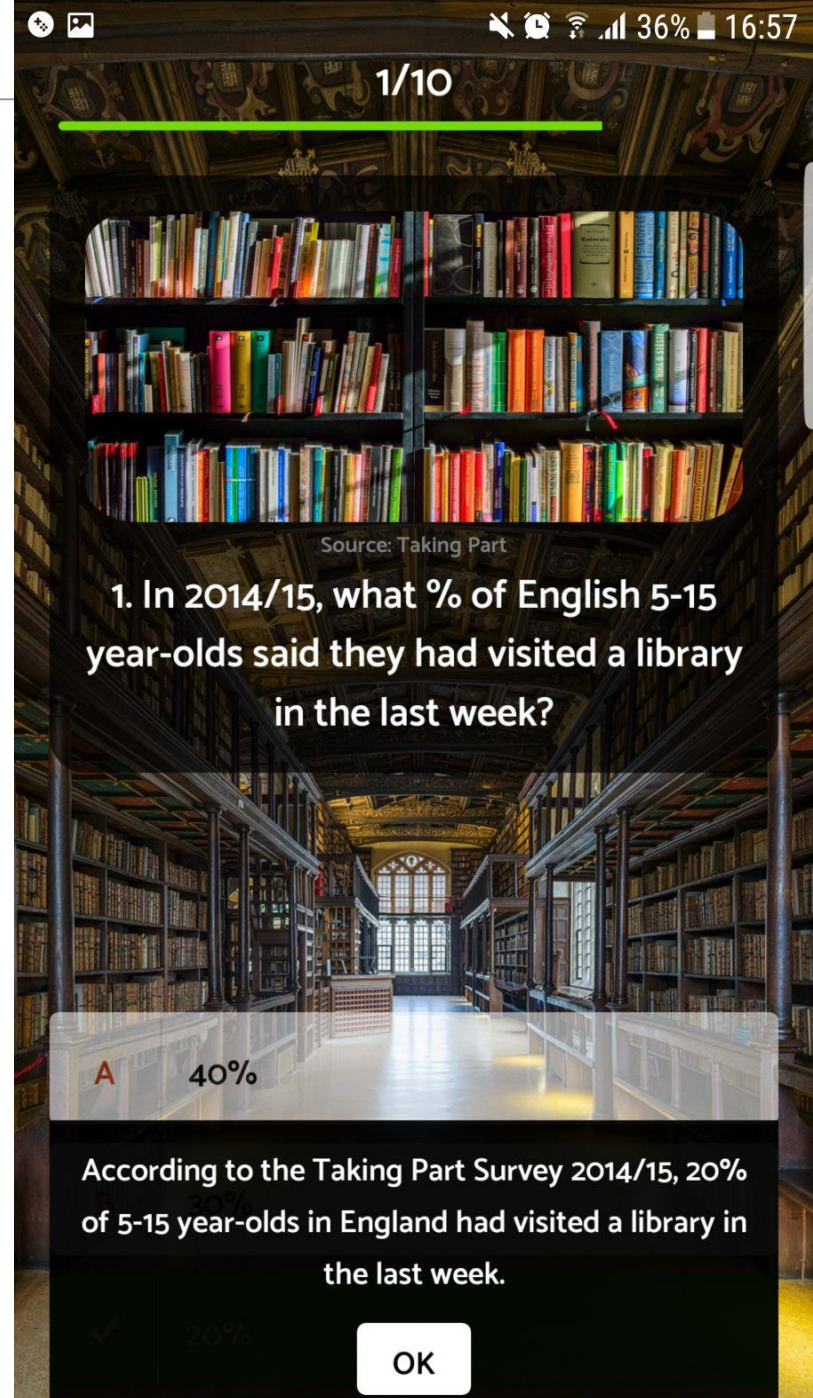
# Obstacles Encountered and What We've Learnt



- *No commit history*
- *Lite documentation*
- *Deprecated code*
- *Skills and upskilling*

# Future of the UKDS Quiz App

- Improved storage (cloud)
- Web-based version of the app
- Multi-answer questions
- Multi player mode



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# Questions

