

HW-Team: Customer Development

TEAM NUMBER AND NAME: 8 “AppBundle”

List all students who actively worked on this Assignment:

1. Name: Fengtian Guo
2. Name: Hongyu He
3. Name: Swamy Honnebagi Mallappa
4. Name: Sharwari Makarand Gothe
5. Name: Minxuan Hu

List Your Three Target Customer Segments:

Segment 1: Mobile Application Development Companies

Segment 2: College Students (Majorly focusing on the young crowd)

Segment 3: Mobile Gamers

Where will you find them?

Place 1: Company’s Virtual Forum

Place 2: College Library

Place 3: College Gaming Area

Write your customer interview questions:

Q1: What measures have you taken to avoid running out of memory when using multiple apps on your phone?

Q2: Do you install separate apps for all this work, or do you browse on websites? Why?

Q3: What do you usually prefer, having the apps that you need or having multiple apps and removing them if need be?

Get out of the building to validate your problem is real!

Team member name: Sharwari

Interview Notes:

Interview 1: Gamer

Pranav is a 24-year-old boy who is a computer science student and enjoys gaming as his past-time hobby. He is a very knowledgeable person in this domain. This interview was conducted in the college gaming area.

Q1: What measures have you taken to avoid running out of memory when using multiple apps on your phone?

A: A: I play mobile games for 7-8 hours each day and have about 15 games on my phone which I regularly play. My hobby demands me to have a 16GB phone memory with 64GB SD card separately inserted in my mobile phone. I have a spare SD card which I use to store the progress I have made and the API bundle for some old games which I am not into now. Using SD cards, I avoid running out of memory.

Q2: Do you install separate apps for all this work, or do you browse on websites? Why?

A: I am a computer science student and a gaming enthusiast. Hence, I spend most of my time on my phone. I prefer installing apps as its more convenient and quicker compared to browsing or visiting websites to get my work done.

Q3: What do you usually prefer, having the apps that you need or having multiple apps and removing them if need be?

A: I require multiple apps for multiple reasons. So, I don't really have the habit of keeping the check on what I install since it's a tedious thing for me. I just install it and when I run out of memory, I just see what I can delete then.

Q4: Since you play multiple games is one phone enough for you?

A: I tend to keep the games I often play on my phone and rest are backed up on my cloud service.

Interview 2: Mobile Application Developer Professional

Patrick is a mobile game developer at Twitch, and he was interviewed by me at a get together place which we call the "Geeks Squad". He is 32 years old and loves game development.

Q1: What measures have you taken to avoid running out of memory when using multiple apps on your phone?

A: Twitch is into mobile game development as well and most of the times I have the alpha and beta version of the same game as well on my phone at the same time for testing purposes. I require a lot of memory on my phone and often run into memory issues. I use SD cards or sometimes just get another hard disk to store some my phone data into it.

Q2: Do you install separate apps for all of this work, or do you browse on websites? Why?

A: I mostly have apps since it's easier to get my work in hand done quickly.

Q3: What do you usually prefer, having the apps that you need or having multiple apps and removing them if need be?

A: I try to usually have only the apps that I need at the moment in my phone since my requirement for memory is high. It helps me in avoiding the problem of running out of memory.

Interview 3: College Student at Northeastern University

Neeraj is a student at Northeastern University doing his Master's in Computer Science. He is 26 years old and finds mobile phones as important as any other basic needs. This interview was conducted in college library

Q1: What measures have you taken to avoid running out of memory when using multiple apps on your phone?

A: I use cloud services to back up my data and then delete it from local phone memory. That allows me to have multiple things on my phone without much memory consumption.

Q2: Do you install separate apps for all of this work, or do you browse on websites? Why?

A: I usually browse on website because not everything I need is either available as apps or I can just get my work done on internet instead of consuming my phone memory.

Q3: What do you usually prefer, having the apps that you need or having multiple apps and removing them if need be?

A: I usually keep my phone empty for smooth functioning and having only that apps that I need.

Q4: How often do you use your phone, and do you think its self-sufficient with respect to available memory?

A: I find mobile phones as important as any other basic need in today's generation. I have multiple apps on my phone which allow me to use my laptop as little as possible for things which are not very technical. The memory is not self-sufficient, but I do have SD cards which help me manage my apps in a proper way.

Interview 4: Professional in Mobile Game Development

Siddhant is a professional game developer at GenITeam Solutions. I met him through a friend and the interview was conducted in person. He is 27 years old.

Q1: What measures have you taken to avoid running out of memory when using multiple apps on your phone?

A: I have a problem of running out of memory since I love gaming and have multiple of them on my phone. I try to get them on cloud as much as possible to allow multiple games on single cellphone.

Q2: Do you install separate apps for all this work, or do you browse on websites? Why?

A: I have separate apps and prefer to keep it that way. Browsing on phones can sometimes be a hassle with small screens and multiple tabs.

Q3: What do you usually prefer, having the apps that you need or having multiple apps and removing them if need be?

A: I tend to remove the apps as and when needed instead of being cautious from the beginning.

Q4: What do you look from memory aspect while developing a game?

A: Our aim is to develop a game that consumes as less memory as possible in order to put less load on the phone. But games in general are heavy applications and hence there is a limit on how light we can make them.

Interview 5: College Student at Northeastern University

Meet is a student at Northeastern University doing MSIS. He is 25 years old and this interview was conducted in the college student center.

Q1: What measures have you taken to avoid running out of memory when using multiple apps on your phone?

A: I have multiple SD cards and I prefer getting a backup on google drive in order to run out of memory on my phone.

Q2: Do you install separate apps for all this work, or do you browse on websites? Why?

A: I prefer having apps on my phone. It makes it easier to access them.

Q3: What do you usually prefer, having the apps that you need or having multiple apps and removing them if need be?

A: I like to try multiple apps and go through their features which requires me to be aware not to fill my phone a lot and remove them once I am done using them in order to try other apps.

Q4: Have you used cloud services in order to save your data?

A: Yes I have many applications that I like to explore and I use cloud services to back up my data.

Team member name: Hongyu

Interview Notes:

Interview 1: Mo - 22 years old, she is a fitness trainer.

Q1: What measures have you taken to avoid running out of memory when using multiple apps on your phone?

A: I will clean up my memory, such as delete some unused apps, videos, and music.

Q2: Do you install separate apps for all of this work, or do you browse on websites? Why?

A: I prefer to install apps rather than browse on websites. Because using apps is more convenient and efficient.

Q3: What do you usually prefer, having the apps that you need or having multiple apps and removing them if need be?

A: I only install the app I need.

Interview 2: Zhenbang - He is 64 years old, and he is a businessman.

Q1: What measures have you taken to avoid running out of memory when using multiple apps on your phone?

A: I will delete some unused apps.

Q2: Do you install separate apps for all of this work, or do you browse on websites? Why?

A: Either way. For example, I prefer to use some apps for shopping, purchase tickets and read some news. However, if I am doing some investment and research some information and stay at home; I prefer to browse on websites.

Q3: What do you usually prefer, having the apps that you need or having multiple apps and removing them if need be?

A: In general, I will install some apps that might be unused. However, after a while, if it is unused, I will delete it.

Interview 3: Graduate Student

Jason is a 26-year-old Graduate Student.

Q1: What measures have you taken to avoid running out of memory when using multiple apps on your phone?

A: I will delete some unused apps.

Q2: Do you install separate apps for all of this work or do you browse on websites? Why?

A: I prefer to install apps rather than browsing on websites.

Q3: What do you usually prefer, having the apps that you need or having multiple apps and removing them if need be?

A: I prefer to install some apps I need rather than having multiple apps stay on my phone.

Interview 4: Lan

Lan is 41 years old. She is a businesswoman.

Q1: What measures have you taken to avoid running out of memory when using multiple apps on your phone?

A: I will delete unused apps.

Q2: Do you install separate apps for all this work, or do you browse on websites? Why?

A: I prefer to install apps rather than browsing on websites. I like to use my smart device to do anything.

Q3: What do you usually prefer, having the apps that you need or having multiple apps and removing them if need be?

A: I only install some apps I used.

Interview 5: Graduate Student

Lisa is 28 years old graduate student at Northeastern University doing Master's in Engineering Management.

Q1: What measures have you taken to avoid running out of memory when using multiple apps on your phone?

A: I will delete some unused apps, video, and audio.

Q2: Do you install separate apps for all this work, or do you browse on websites? Why?

A: I like to install lots of apps more than browse websites.

Q3: What do you usually prefer, having the apps that you need or having multiple apps and removing them if need be?

A: I like to have some apps I need.

Team member name: Minxuan

Interview Notes:

Interview 1: College students

Dawei is 24-year-old College student. I met her on campus. The interview was conducted in person.

Q1: What is your occupation?

A: I am a master's student studying Information System. I am interning in a software company.

Q2: What measures have you used to avoid running out of memory while using your phone?

A: I usually use iCloud to store my photos and files

Q3: Do you install separate apps for all this work, or do you browse on websites? Why?

A: Half and half, I download the most frequently used apps to my phone

Q4: What do you usually prefer, having the apps that you need or having multiple apps and removing them if need be?

A: I prefer having the apps that I need

Q5: If your phone doesn't have enough memory, or if someone you know doesn't have enough memory, what problems do you/they have in this situation?

A: I would advise them to buy some iCloud storage each month, it is quite cheap

Q6: Does shrinking your app size make you less worried about running out of memory on your phone ?

A: Well, it will solve some problems.

Interview 2: Mobile Game Developing Professional

Linbo is a 25-year-old Businessman. I met him at a coffee shop nearby. The interview was conducted in person.

Q1: It looks like you must use apps at work. What is your occupation?

A: I work at Harvard Medical School. My job is to meet the needs of customers and cooperate with lab members to complete the experimental results.

Q2: What measures have you used to avoid running out of memory while using your phone?

A: I clear the task manager on my phone regularly when the issue isn't major enough however I usually end up removing the unused apps from my phone in order to avoid running into memory issues.

Q3: Do you install separate apps for all this work, or do you browse on websites? Why?

A: I prefer browsing on websites, because it can help me save space on my phone

Q4: What do you usually prefer, having the apps that you need or having multiple apps and removing them if need be?

A: I prefer having the apps that I need, no extra apps will be downloaded

Q5: If your phone doesn't have enough memory, or if someone you know doesn't have enough memory, what problems do you/they have in this situation?

A: They may delete some necessary or unnecessary apps

Q6: Does shrinking your app size make you less worried about running out of memory on your phone ?

A: Yes, it relieves my worries in a way

Interview 3: Mobile Gamer

Joe is an 18-year-old Mobile Gamer. I met her at game community online.

Q1: What measures have you used to avoid running out of memory while using your phone?

A: Use the 'One button clear' function on my phone but that just helps me in clearing my RAM. For major fixes, I usually tend to uninstall the apps from my phone time to time.

Q2: Do you install separate apps for all this work, or do you browse on websites? Why?

A: I like to install apps since I travel quite frequently and may not have a good internet connection for browsing online.

Q3: What do you usually prefer, having the apps that you need or having multiple apps and removing them if need be?

A: I prefer having multiple apps and removing them when I run out of memory.

Q4: If your phone doesn't have enough memory, or if someone you know doesn't have enough memory, what problems do you/they have in this situation?

A: My new app downloading process will cease in half

Q5: Does shrinking your app size make you less worried about running out of memory on your phone ?

A: No. Because it is always the unknown document and data that takes up most of my memory

Interview 4: College student

Qiuchi is a 24-year-old College student. I met her on campus. The interview was conducted in person.

Q1: What is your occupation?

A: I am a master's student majoring in Information System.

Q2: What measures have you used to avoid running out of memory while using your phone?

A: Use the phone housekeeper to clear the garbage cache and sort the application space

Q3: Do you install separate apps for all this work, or do you browse on websites? Why?

A: Well I always have a pretty good connectivity and hence prefer to browse websites instead of downloading the apps

Q4: What do you usually prefer, having the apps that you need or having multiple apps and removing them if need be?

A: I prefer having the apps that I need

Q5: If your phone doesn't have enough memory, or if someone you know doesn't have enough memory, what problems do you/they have in this situation?

A: Mobile phone use process jam, flash back

Q6: Does shrinking your app size make you less worried about running out of memory on your phone ?

A: Maybe. I haven't tried it yet

Interview 5: Businessperson

Summer is a 35-year-old developer. I interviewed her online.

Q1: It looks like you must use apps at work. What is your occupation?

A: I work for a language agency

Q2: What measures have you used to avoid running out of memory while using your phone?

A: Clear chat logs or apps I don't normally use

Q3: Do you install separate apps for all this work, or do you browse on websites? Why?

A: I usually browse on website, because once installed I had to manage a bunch of apps by icon.

Q4: What do you usually prefer, having the apps that you need or having multiple apps and removing them if need be?

A: I prefer having the apps that I need

Q5: If your phone doesn't have enough memory, or if someone you know doesn't have enough memory, what problems do you/they have in this situation?

A: This may affect some of my work cache

Q6: Does shrinking your app size make you less worried about running out of memory on your phone ?

A: Yes, so every app I download doesn't take up too much of the phone's memory, which saves space

Team member name: Swamy

Interview Notes:

Interview 1: Mobile application developer at Cubix

Suhas is an application development engineer working for Cubix. He has a past work experience of 10 years into development. He has been working for Cubix for the past 2 years. Cubix is a leading mobile app, games and enterprise software development company. The interview was conducted through skype.

Q1: What is your role in the company? Can you give me details of it?

A: I work as a senior software engineer at cubix. My job is to develop android applications for the clients of my company. I cannot disclose the names of my clients for now. I carry out the entire application development starting from conceiving, designing, testing, releasing and supporting the app. We don't do teamwork here, rather an individual has to look at the entire application.

Q2: Do you install separate apps for all this work, or do you browse on websites? Why?

A: I hardly use mobile applications on my personal phone and prefer using websites. You will find around 20 apps. Since I work on them the whole day at my office, I don't really use my personal phone much. At my office I use 5 android mobile phones with 250 applications on these phones for the development purpose. I do all the coding stuff on my PC and deploy onto my phone to test them in the end. I do install the developed apk files on my phone, test the app.

Q3: What measures have you taken to avoid running out of memory when using multiple apps on your phone?

A: I use external SD cards in order to store apps because while developing I don't really write an efficient code and deploy onto my phone. The installation takes a lot of memory. So, I store apps on my SD card. And I clear up space every way I can.

Q4: What do you usually prefer, having the apps that you need or having multiple apps and removing them if need be?

A: Since I'm into mobile application development, I keep all the applications and won't delete the unwanted ones. I use them more often.

Q5: How is your company dealing with cloud service? And which cloud platform do you use? Why?

A: Right now, 83% of our company's infrastructure is cloud based and most of the workload is residing in cloud. We use Amazon web service because its highly secure, flexible and their APIs are available in various programming languages which helps in managing infrastructure programmatically.

Interview 2: College student at Northeastern University

Nishanth, is a graduate student at Northeastern university. I met him in the library and asked for a short interview.

Q1: How many hours do you spend on your phone? Why?

A: I use my mobile phone for pretty much everything. I spend 4 to 5 hours on my mobile phone that includes waking up in the morning reading news, checking social media, replying to emails. Later in the day browsing, listening to some music, watching short videos or movies to get some entertainment.

Q2: Do you install separate apps for all this work, or do you browse on websites? Why?

A: I prefer to use everything mobile apps rather than websites. They are faster, to get push notifications, instant updates, convenient and user friendly.

Q3: What do you usually prefer, having the apps that you need or having multiple apps and removing them if need be?

A: I keep most frequently used apps on my phone rest all will be deleted. I have 80 applications on my phone. I use an iPhone and the apps are large in size and it consumes a lot of memory to store data. I download music and movies on my phone to watch them while travelling. That's also memory consuming. So, I deleted them.

Q4: What measures have you taken to avoid running out of memory when using multiple apps on your phone?

A: I store photos and videos in my iCloud storage and access whenever required. I face this more often as my usage is intense.

Q5: What is the biggest drawback on your phone? Why do you think so?

A: I can't use an external SD card for storage on my iPhone. Buying a new iPhone with a large space is expensive.

Interview 3: Pro Gamer

Rohit is a pro gamer. I met him in the college gaming center. Since he plays a lot of games on PC and mobile phone, I chose him for the interview.

Q1: How many hours do you spend on your phone? Why?

A: I spend 7 hours on average on my phone. Most of my time goes into gaming and the rest of the time is spent on social media.

Q2: What measures have you taken to avoid running out of memory when using multiple apps on your phone?

A: I use an external SD card and store a lot of things there. Especially games because they consume a lot of memory on my phone. I keep very few things on my phone storage.

Q3: Do you install separate apps for all this work, or do you browse on websites? Why?

A: I prefer browsing a lot of things on websites because my phone hangs up while playing games if I cover my phone storage with mobile apps.

Q4: What do you usually prefer, having the apps that you need or having multiple apps and removing them if need be?

A: I install apps whenever needed because that gives me a lot of space for my games.

Interview 4: College Student at Northeastern University

Summer is an undergraduate student at northeastern. She is an event manager in our college. As she is an extensive user of mobile for event management, I interviewed her.

Q1: What measures have you taken to avoid running out of memory when using multiple apps on your phone?

A: I store all the app data in my cloud and try to keep some free space on my phone.

Q2: Which category of apps do you have more?

A: I have a lot of shopping and lifestyle apps installed on my phone.

Q3: Do you install separate apps for all of this work or do you browse on websites? Why?

A: I prefer using mobile applications more than websites because I feel convenient to use and not much time consuming.

Q4: What do you usually prefer, having the apps that you need or having multiple apps and removing them if need be?

A: I remove unnecessary apps from my phone and install whenever needed.

Q5: Did you use any of the cloud services? Why or why not?

A: I don't use any cloud services because they are not secured. Recently I read one news that Google sent private photos which are backed up on google photos of one user to some other user. This is not safe.

Interview 5: Gamer

Bharath is my close friend. He is good at games and most of his time is spent playing PubG and candy crush.

Q1: What measures have you taken to avoid running out of memory when using multiple apps on your phone?

A: I use my secondary phone to store things and my laptop to store photos and videos. So that I can keep free space for gaming apps on my primary phone.

Q2: Do you install separate apps for all this work, or do you browse on websites? Why?

A: I prefer using websites than apps because they consume a lot of space on my phone.

Q3: What do you usually prefer, having the apps that you need or having multiple apps and removing them if need be?

A: I do remove all the unwanted apps and free up some memory on my phone by doing so.

Q4: How many hours do you spend daily playing games on my phone? Does your phone crash while playing?

A: I spend 6 hours daily playing games on my phone. No, my phone doesn't crash while playing as I keep free space on my phone all the time.

Q5: Does your games need high end specification phone? Why?

A: Yes, I need high end specification phone because the games contain a lot of graphic content.

Team member name: Fengtian

Interview Notes:

Interview 1: Mobile Application Development Companies Worker

Rebecca, a game developer that dabbles in app development and data engineering, I interviewed her in WB Games Boston Company's University Open House. The interview was conducted in person.

Q1: Do you often play mobile games?

A: Yeah, as a game developer, I usually call it "Marketing Research".

Q2: How often do you encounter memory issues in your phone?

A: I often need to download our company's games on my phone to understand and test. There are also a lot of photos and work information on the phone.

Q3: What measures have you taken to avoid running out of memory when using multiple apps on your phone?

A: Store photos in cloud disk, delete unnecessary software and data

Q4: Do you install separate apps for all this work, or do you browse on websites? Why?

A: It depends on the functions of applications. For some necessary applications that I usually need to use, I install them. For others, I just browse websites.

Q5: What do you usually prefer, having the apps that you need or having multiple apps and removing them if need be?

A: I think I am the second one. Because I always download many applications when I need to use them and forget to delete them after using them. I often must delete them if I need more space.

Interview 2: College Student

Yuzhen, a 24-year-old college student at NEU. I met him in the student center. The interview was conducted in person.

Q1: What is your occupation?

A: I am a master's student in the Information System at Northeastern University.

Q2: What do you often do with your phone?

A: Connect with others, watch live programs, play games or take photos.

Q3: Do you have memory issues on your phone?

A: Not often, I have two phones. One for communication or taking photos, the other is for watching videos and playing games.

Q4: What measures have you taken to avoid running out of memory when using multiple apps on your phone?

A: I have this problem at the time when I only have one phone. I usually download phone-cleaning software and delete useless applications and data.

Q5: Do you install separate apps for all this work, or do you browse on websites? Why?

A: I only install applications that really attract me. However, I usually find most of the interesting applications on my phone by browsing on websites.

Q6: What do you usually prefer, having the apps that you need or having multiple apps and removing them if need be?

A: I often use my phone. In that case, I need to make sure it has enough memory. I download applications when I need them and delete them when it is useless.

Interview 3: College Student

Yanye, a 24-year-old college student at NEU. I met her in the student center when she was using her phone to take a selfie. The interview was conducted in person.

Q1: What is your occupation?

A: I am a master's student in Computer Science at Northeastern University.

Q2: How often do you encounter memory issues in your phone?

A: Usually, I like taking photos and storing them in my phone. In that case, there is not enough memory for other applications. However, I still do not want to delete or move out any photos since I like to watch them from time to time.

Q3: What measures have you taken to avoid running out of memory when using multiple apps on your phone?

A: Delete unwanted applications and move photos to cloud storage.

Q4: Do you install separate apps for all this work, or do you browse on websites? Why?

A: I browse on a website. Downloading too many applications is troublesome. I have to update them, and they still occupy my phone's storage space. Searching information on the internet is very convenient.

Q5: What do you usually prefer, having the apps that you need or having multiple apps and removing them if need be?

A: I only download the applications when necessary.

Interview 4: Mobile Gamer

Jinyi, a 24-year-old college student at NEU. I met him in a cyber cafe. The interview was conducted in person.

Q1: What is your occupation?

A: I am a master's student in the Information System at Northeastern University.

Q2: Do you often play games with your phone?

A: Yes, I think it is a good choice to kill your free time.

Q3: How often do you encounter memory issues in your phone?

A: Almost every day. I usually download mobile games on my phone.

Q4: What measures have you taken to avoid running out of memory when using multiple apps on your phone?

A: Delete other applications and photos. Replace old games with new games.

Q5: Do you install separate apps for all this work, or do you browse on websites? Why?

A: For example, games and video software that I always need to use. I will install them. News and other text message software. I browse websites.

Q6: What do you usually prefer, having the apps that you need or having multiple apps and removing them if need be?

A: I have no idea about which application of my phone that I will use in the future. Therefore, I keep all of them and delete them when I need to.

Interview 5: Mobile Gamer

Zhenyu, a 23-year-old college student at NEU. He is my roommate, so we just talk at home. He loves all kinds of games. The interview was conducted in person.

Q1: How often do you play games with your phone?

A: Quite often. I have multiple games on my phone.

Q2: Well, does your phone usually have a lot of memory?

A: No, I would like to play 3A games. Therefore, I only download mobile games with high image quality and attractive story. Those games are very big.

Q3: What measures have you taken to avoid running out of memory when using multiple apps on your phone?

A: Move all the other applications and data to cloud service or HDD.

Q4: Do you install separate apps for all this work, or do you browse on websites? Why?

A: Install games on my phone and check news and information of this game on the website.

Q5: What do you usually prefer, having the apps that you need or having multiple apps and removing them if need be?

A: Of course, I only have applications that I need to use. I will store other data and information on Cloud Services.