

# IS 543 Fall 2023

## Mobile Platform Development

### Project 2 Q&A

### Semester Review

Dr. Stephen W. Liddle  
782 TNRB, office hours Today 2-3pm  
(And much of the rest of the day)  
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Zoom: <https://bit.ly/liddlezoom>



# Tuesday's Devotional

- BYU Christmas Devotional  
It was spectacular!

# Today

- ⌚ Project 2 Q&A
- ⌚ Semester Review

# Semester Review

- ⌚ This has been a semester of “new”
  - ⌚ iOS 17
  - ⌚ Xcode 15
  - ⌚ MacOS Sonoma (14)
  - ⌚ iPhone 15 lineup
  - ⌚ Swift 5.9
  - ⌚ SwiftUI, SwiftData, ...



# A New Language: Swift

- Interesting new things in Swift

- Optional types, unwrapping

- Let vs. var

- Minimal parentheses, semicolons

- Properties: computed vs. stored

- String interpolation

- Unicode-friendly names

- Like let  $\pi = 3.14159$

- Array & dictionary literals

- Protocol, class, struct, enum

- Closures

- We've only managed an introduction – there is more to the language



# A New IDE: Xcode 15

- ⦿ Navigators, inspectors, and editors

Oh my!

- ⦿ SwiftUI

Declarative/reactive MVVM architecture

Canvas previews

- ⦿ Code completion

- ⦿ Debugging & using the simulator and preview canvas

- ⦿ Sometimes it has been “bleeding-edge”

In IS 543, it has ever been thus



# A New Operating System: iOS 17

- iOS 17 is a refinement of iOS 16 with plenty of new elements
  - Fortunately, most of those updates haven't affected the core APIs we've used
  - The evolution of Swift and its frameworks (e.g. SwiftUI, SwiftData) have affected this class most
- We've focused on basics:
  - Model View ViewModel pattern
  - Declarative/reactive UI paradigm
  - Views, view modifiers, state, property wrappers
  - Universal vs. iPhone/iPad-specific
  - Main UI widgets (labels, text fields, buttons, switches, web view, map view, etc.)
  - Various kinds of container view controllers (List, Form, NavigationStack, etc.)
  - App navigation structure
  - Toolbars
  - Modal view controllers, alerts, etc.
  - Networking basics



# A New Device??

- ⦿ Maybe you “had to buy” a new iPhone



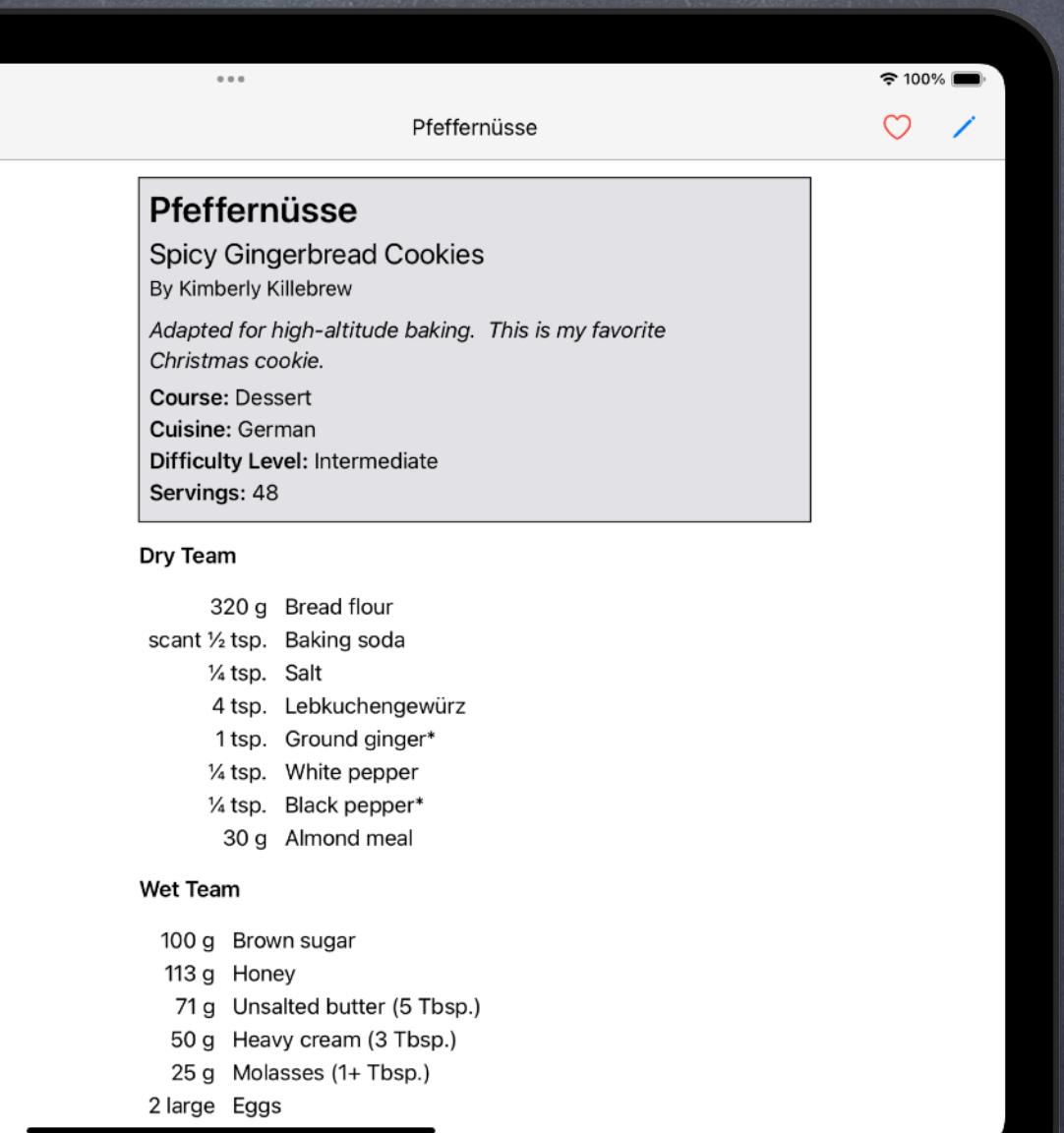
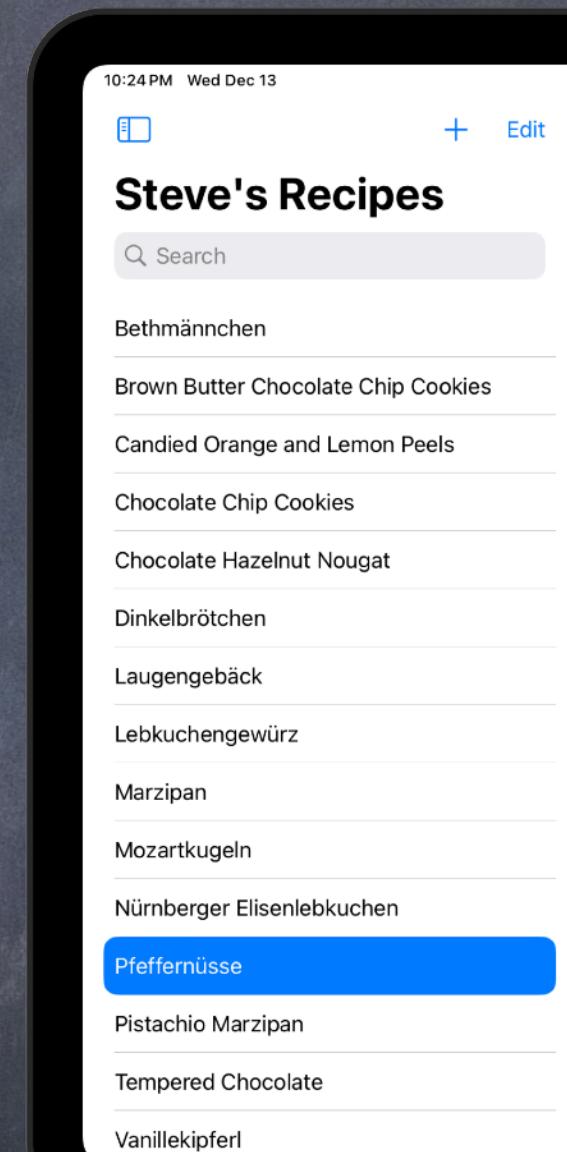
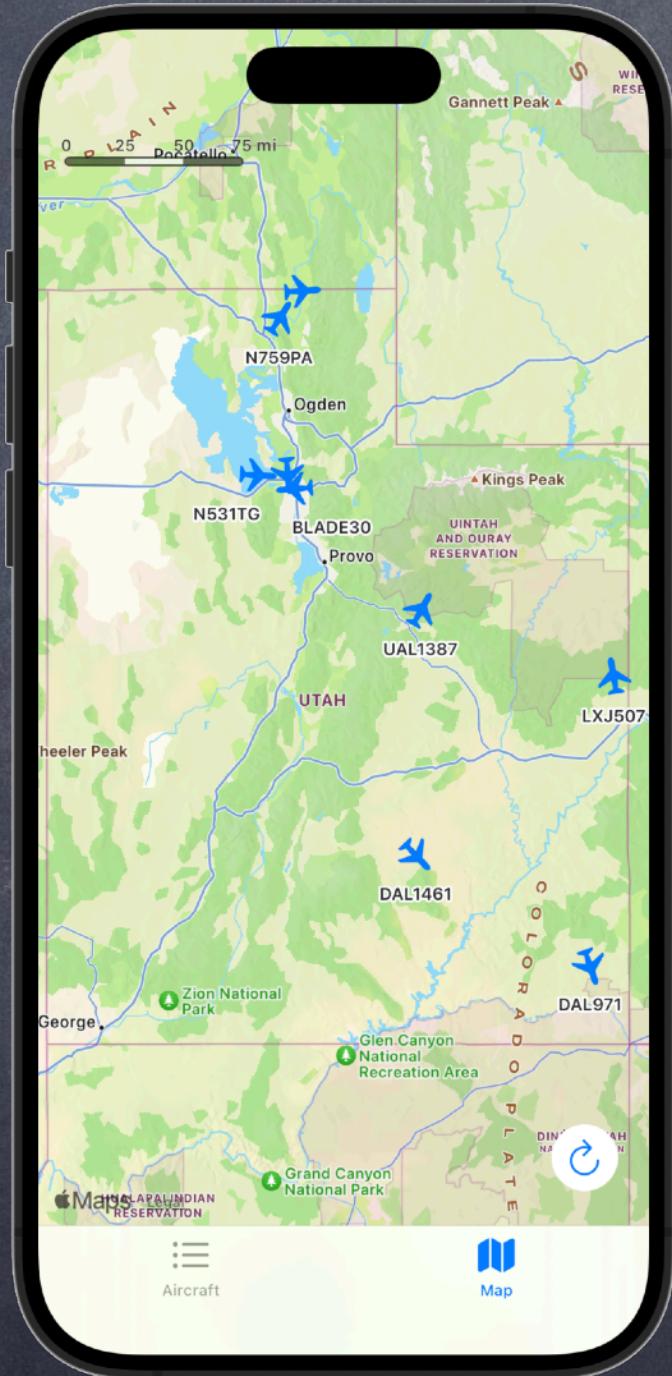
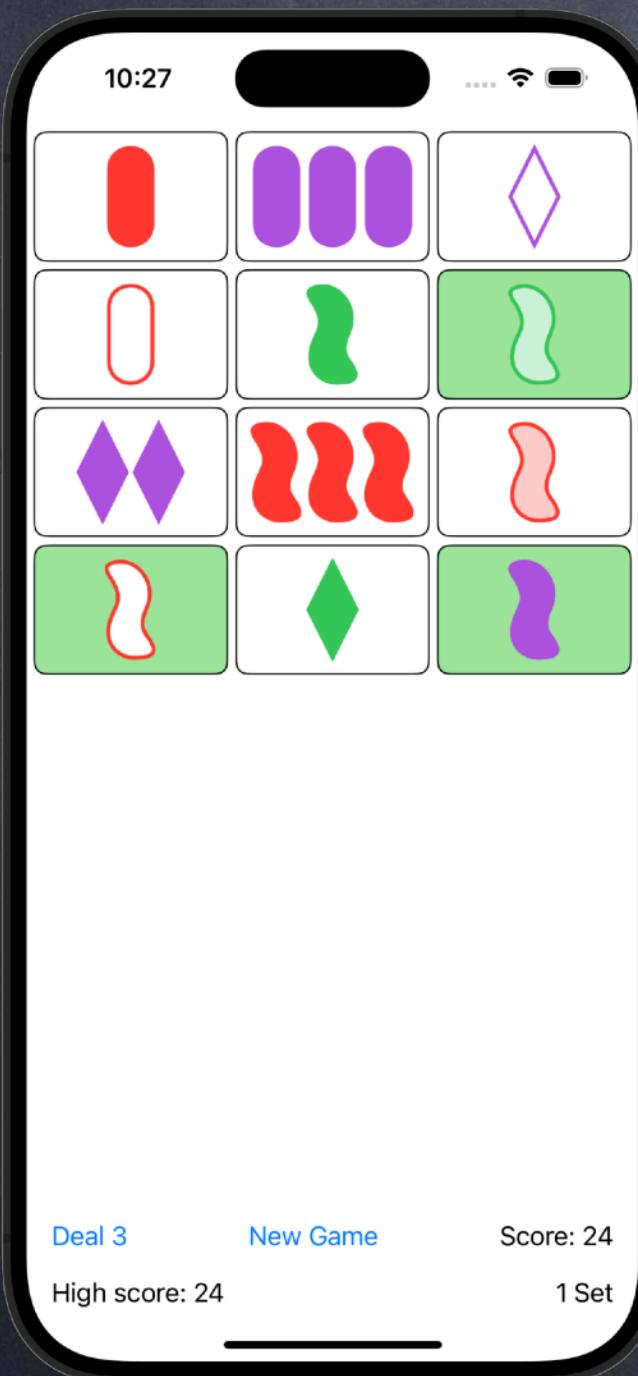
# A New Device??

- ⦿ Or an M3-based MacBook 😊



Space  
Black!

# Cool Projects...



# What Should I Do with This?

- ⦿ Don't leave it at one class and then done

This is too important an area to ignore

Knowing mobile dev is a significant feather in your cap

- ⦿ Look for ways to contribute

MISM capstone project

Many organizations (large, small, startup, established) need some kind of mobile app work done

- ⦿ Use a little imagination

You can design great solutions to many problems all of us face every day

- ⦿ Mobile puts power in the hands of your users

Literally

# Where Do I Go from Here?

- ⦿ You're not an expert yet

But you do have a solid foundation

10,000 hours to become expert

If you want to pursue this area of expertise, you're well on your way

- ⦿ Additional great resources:

Paul Hegarty's Stanford iOS course

Other online courses on Udemy, PluralSight, etc.

Lots of blogs, newsletters, etc.

Hacking with Swift can be a great resource

Ray Wenderlich has some really nice materials

Read the Apple documentation and download Apple sample apps

Watch the Apple WWDC videos (ignore the "fanboy" attitudes)

Remember Liddle's Law!

You're never done  
programming

So you have to define "done" and be okay with that

# Research Assistant(s)

- ⦿ I want to pay you to have fun! (and there's plenty to do)

There are a number of features in the Scripture Citation Index app that could use some work

Improved UI/UX

Audio player for talks with variable speed control

Download locale-specific database

Integrate the geocoded places and mapping feature

Provide a speakers view like the web app does (talks given, citation index filtered by speaker)

Also:

Android app

Web app

Spanish & Portuguese translations

See me if you'd like to get paid to engage in some coding frenzies

# Final Exam

- ⦿ In-class programming final

- 3 hours, open book, open computer, open internet, closed neighbor

- (No two-way communication; no posting questions and getting answers during the final)

- But you can ask me questions

- You'll make notes on the exam and turn it in when you're done

- Upload a zip of your exam code to Learning Suite

- ⦿ You may also take the final at another time and place

- But you won't be able to ask me questions

- You're on your honor to follow the rules of the exam

- Also upload zip of your exam code and the completed survey to Learning Suite

# Final Exam

## ⌚ How do I prepare?

By completing the projects and being ready to tackle some iOS/Swift programming problems

You've been preparing all semester

Come ready to think clearly and not stay stuck

I might give you the opportunity to do some things you haven't done before

Know how to read the Apple documentation in case I ask you to use a widget we haven't already covered in class

You may want to review my lecture slides and the projects we've done

You'll be able to choose from a list of tasks (all of which would be too big for anybody)

If there's an area from this class you want to focus on or avoid, you will be able to do so

# Final Exam

- ⦿ Final Exam Instructions

*This exam is open book, open notes, open internet, but “closed neighbor.” This means you can search and read anything you’d like, but you can’t post messages or communicate to anyone else (except Dr. Liddle) during this exam. The penalty for communicating with others is a score of 0 for the exam. You have three hours to complete this exam. You may not discuss the contents of the exam with anyone who has not yet taken the exam. This exam is non-traditional. I have here a list of tasks that is too big for anyone (including me) to accomplish in three hours. Don’t be intimidated! Your job is NOT to finish the list of tasks, but rather to spend three hours working on this exam. I will grade your work along several dimensions: quality of tasks you accomplished (user experience, adherence to HIG, etc.), programming technique (code quality, use of good modularity, robustness to failures, use of patterns like MVVM, SwiftData, etc.), how much you accomplished, and overall mastery of iOS programming that you demonstrate. I will also attempt to measure and factor in how much you have progressed over the semester as part of the grade. As you accomplish tasks on the list, please check the box next to the task so I’ll know to expect that your solution includes that element. Feel free to make other notes on this exam.*

- ⦿ Followed by a couple of pages of options you can choose to work on  
Sometimes grouped into easy/medium/hard alternatives

# Coming Up

- ⦿ Student evaluations are very important  
(80% of you have already done this)

Either tell the system it's okay for me to see your name, or send me an email stating that you completed the student evaluation

Help me make this the best class possible by sharing your constructive ideas for improvement  
E.g., I spent a lot of time doing videos this semester because of prior student feedback

- ⦿ Final exam on Thursday, Dec. 21, 7am - 10am  
Be ready for the awesome treats I'm planning to make (I'm thinking my Bavarian sourdough soft pretzels)

# Do you feel like Paul?

## < 2 Timothy

DO THE WORK OF AN EVANGELIST, MAKE FULL PROOF OF MY MINISTRY.

6 For I am now ready to be offered, and the time of my departure is at hand.

7 I have fought a good fight, I have finished my course, I have kept the faith:

8 Henceforth there is laid up for me a crown of righteousness, which the Lord, the righteous judge, shall give me at that day: and not to me only, but unto all them also that love his appearing.

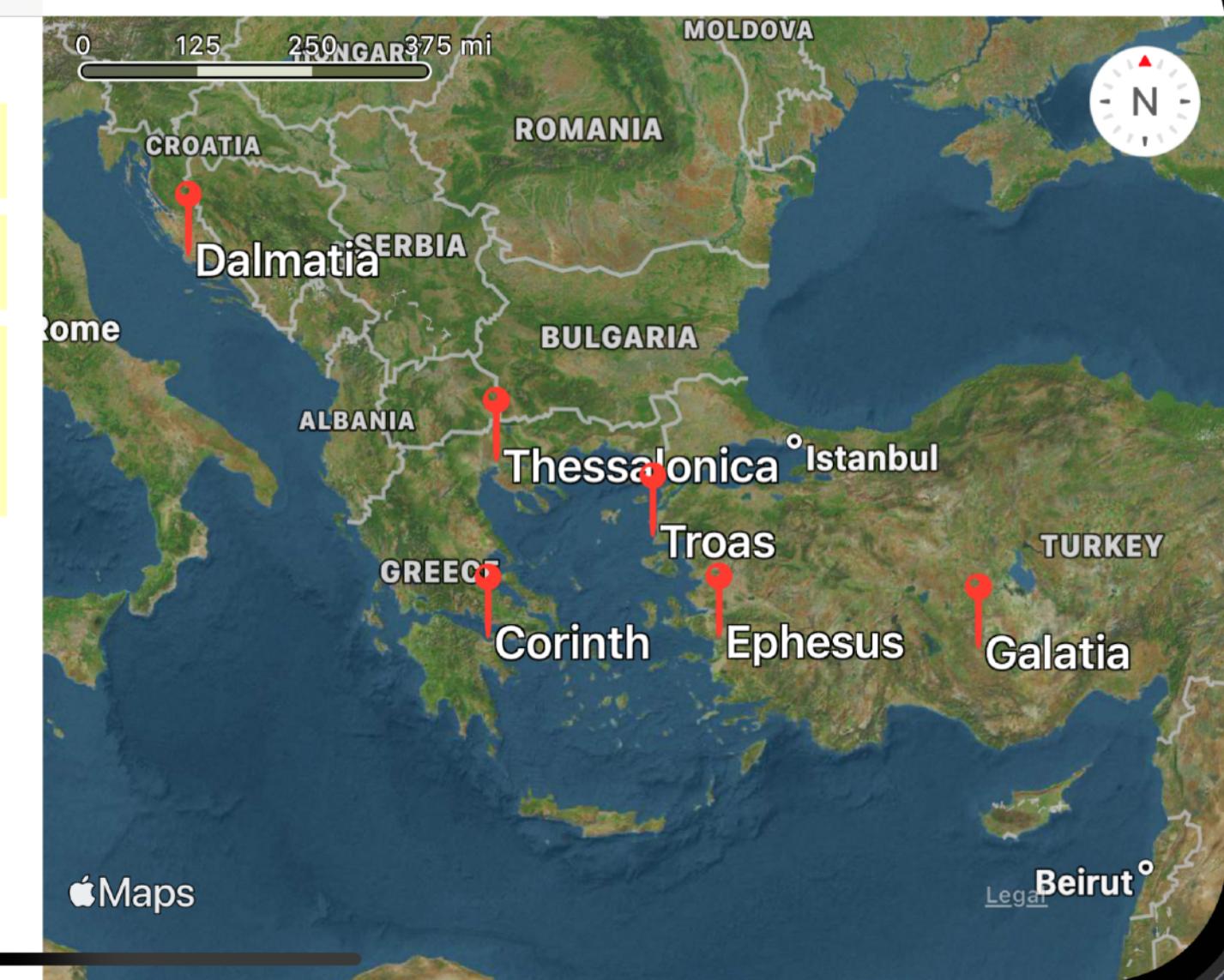
9 Do thy diligence to come shortly unto me:

10 For Demas hath forsaken me, having loved this present world, and is departed unto [Thessalonica](#); Crescens to [Galatia](#), Titus unto [Dalmatia](#).

11 Only Luke is with me. Take Mark, and bring him with thee: for he is profitable to me for the ministry.

12 And Tychicus have I sent to [Ephesus](#).

## 2 Timothy 4





## 50 WAYS TO LET YOUR LIGHT SHINE

- |  |   |
|--|---|
| <ul style="list-style-type: none"><li>1 Give your favorite book to a loved one.</li><li>2 Donate cans to your local food bank.</li><li>3 Smile at someone.</li><li>4 Leave a kind note for your mail carrier.</li><li>5 Invite a neighbor to a worship service.</li><li>6 Watch The Christ Child with family or friends.</li><li>7 Leave an uplifting comment on social media.</li><li>8 Visit with an elderly neighbor.</li><li>9 Text someone, "I'm grateful for you."</li><li>10 Tell a loved one they matter to you.</li><li>11 Be kind to yourself. Practice self-care.</li><li>12 Clean up trash in your community.</li><li>13 Send a funny meme or video to a friend.</li><li>14 Make a meal with a family member.</li><li>15 Go caroling with a group.</li><li>16 Take a walk with a friend.</li><li>17 Offer to teach someone a new skill.</li><li>18 Hold the door open for a stranger.</li><li>19 Host a family game night.</li><li>20 Pray for someone by name.</li><li>21 Volunteer at your local library.</li><li>22 Pay for the person behind you at the store.</li><li>23 Give a hug to a friend.</li><li>24 Forgive someone.</li><li>25 Invite others to a Christmas celebration.</li></ul> | <ul style="list-style-type: none"><li>26 Call someone you miss.</li><li>27 Learn to say "Merry Christmas" in a new language.</li><li>28 Carry an extra snack for someone in need.</li><li>29 Send a homemade Christmas card to a friend.</li><li>30 Plan some one-on-one time with a loved one.</li><li>31 Let a stranger go ahead of you in line.</li><li>32 Be patient with waitstaff and customer service.</li><li>33 Contribute to the Giving Machines locally or online.</li><li>34 Text a photo of a fond memory to a family member.</li><li>35 Learn how another culture celebrates Christmas.</li><li>36 Complete an item on a loved one's to-do list.</li><li>37 Ask a coworker how you can lighten their load.</li><li>38 Post about a loved one using #LightTheWorld.</li><li>39 Share a link to a holiday song that you love.</li><li>40 Help someone research their family genealogy.</li><li>41 Make a Christmas playlist and share it with a friend.</li><li>42 Send a thank-you note to a healthcare worker.</li><li>43 Stop to help someone who is having car trouble.</li><li>44 Leave a gift on a neighbor's doorstep.</li><li>45 Support a local small business.</li><li>46 Give your neighbor a compliment.</li><li>47 Let someone else be kind to you.</li><li>48 Help a loved one clean their home.</li><li>49 Apologize to someone.</li><li>50 Laugh with a friend.</li></ul> |
|--|---|



THE CHURCH OF  
JESUS CHRIST  
OF LATTER-DAY SAINTS

# My Testimony

- ➊ Things I know because the Spirit has testified to my heart:

The Savior lives – He has redeemed me and you, we just need to turn to Him

God speaks to His children today, through the Holy Spirit and through a living prophet

Following the covenant path will lead us to our greatest joy and happiness in this life and the next

The Church of Jesus Christ has been restored in these latter days, priesthood keys are with us

The Book of Mormon and the other scriptures are God's words to us

It is all true, and worth our best efforts as we strive to be true disciples of the Lord Jesus Christ

Let's make time for Him every day



# Thank You

• I'm glad you took this class

You get to choose your electives

Thank you for choosing IS 543 and helping make it a success

For me this has been a very enjoyable class

• I hope you are leaving educated and inspired

I believe in you!

You can do great things

Please stay in touch and let me know as you do interesting things