

INNOVATE.  
COLLABORATE.  
ITERATE.  
REPEAT.

Microsoft Interviews



# CONTENTS

- Logistics/Scheduling
- Interview format
- What are we looking for?
- Hints and tips
- What happens next

This is an interactive session.

Ask questions.

Add comments.

Help us help you!!

# Technical Screen Scheduling Process

1. You will receive an email to schedule your interview from [microsoft@yello.co](mailto:microsoft@yello.co)
  - If you are not seeing this email in your inbox, please check your Spam/Junk folder.
2. There will be a link which will direct you to our scheduling website. Once here, choose the available time which best fits your schedule. **When choosing a time, please make note of the time zone in which the interview is scheduled.**
3. You will be prompted to answer a few questions about yourself and upload your resume and a “candidate interest form”. Your time will get confirmed AFTER you have completed these steps.
4. Once this is complete, you will receive an email confirmation for the date/time selected.
5. Interview times are first come, first serve, so sign up early! (there will be enough spots for everyone!)

# Technical Screen and Follow Up

1. Phone/Skype interviews will happen during the weeks of October 9<sup>th</sup> or October 16<sup>th</sup>.
2. Your interviewer will be a Microsoft Engineer.
3. Please see the following slide for connection requirements for the interviews.
4. Within 2 weeks of your technical phone interview we will provide you with the results.
5. Those who advance to the final round interview event will be notified within 2 weeks of the technical phone/skype interview.
6. The final round interview event will take place in South Africa in early December.

# Skype Requirement

## // Instructions

- Before the call, the candidate must provide the **best phone number** to be called at, their **Skype ID** and best **email address**.

## For the interview, you will need:

- A PC with an Internet browser. Only the browsers [Microsoft Edge](#) and [Google Chrome](#) are supported by the real-time code editor
- A good and reliable Internet connection
- (Optional) headphones connected to their phone

## The day of the interview:

You will receive a call from the interviewer. The interviewer will create an interview through the [Skype Real-Time Code Editor](#) and will share the link with the candidate by email or Skype.

Make sure to PRACTICE a skype call with a friend to ensure your mic and speakers work.

# What role are you being interviewed for?

## SOFTWARE ENGINEERS (SWE)

SWE's do the detailed design (code design) of the features, write the product code, and fix defects which are found.

SWE's or "Developers" - write the code -- C#, javascript, C++ and other programming languages -- that turns concepts into new technologies and services. We are experts in feature design and feasibility, and we collaborate with program managers to define features and ensure quality.

# INTERVIEW FORMAT

- Short, 30 minute interview
- Housekeeping tasks:
  - At the beginning: 2-5 minutes – get settled in, introductions, verifying your application form
  - At the end: 5-7 minutes – you asking questions, interviewer collecting notes and completing paperwork
- Generally, we only spend ~20 minutes on questions
- Interviewer will be taking notes throughout

# WHAT ARE WE LOOKING FOR?

Four main criteria:

- Great communication skills
- Passion for technology
- Problem solving skills/technical aptitude
- Customer focus

Three Major Competencies:

- Technical Excellence
- End-to-end Innovation
- Drive for Results

Not looking for...

- "Perfect" answer
- Generalities – get to specifics/facts





Preparing for the technical interview

# Introduction: Dheeraj “D” Sarpangal



- Principal Group Engineering Manager, Dynamics 365 for Talent
- 15+ years experience at Microsoft
- 10+ years experience managing teams/employees
- Conducted 500+ technical interviews

# Introduction: Tim Tebow



- You probably don't know who he is
- But you'll never forget him after today!

# What will I learn today?


- An experienced Microsoft interviewer (that's me!) will give you an outline and self-paced study guide of what you need to do to succeed in the technical interview



# Onboarding Guide

- This is a self-paced study guide to prepare you for the technical interview
- Check off items as you complete them
- We may add new items here after we send the guide – keep checking back for updates!
- If you didn't get an email this week with the guide, check your junk mail/spam folder!

## INTRODUCTION

- ☐ Attend an orientation session to learn how to effectively use this guide New 

## PREP WORK

- ☐ Create a github account New 

- ☐ Join your peers in a slack channel community New 

## TECHNICAL SCREEN - TEST YOURSELF!

Whether you do this before or after the lesson plans, these are the types of questions you may be expected to solve in 15-20 minutes.

- ☐ String Compression New 

- ☐ Add digits in number New 

## LESSON PLANS

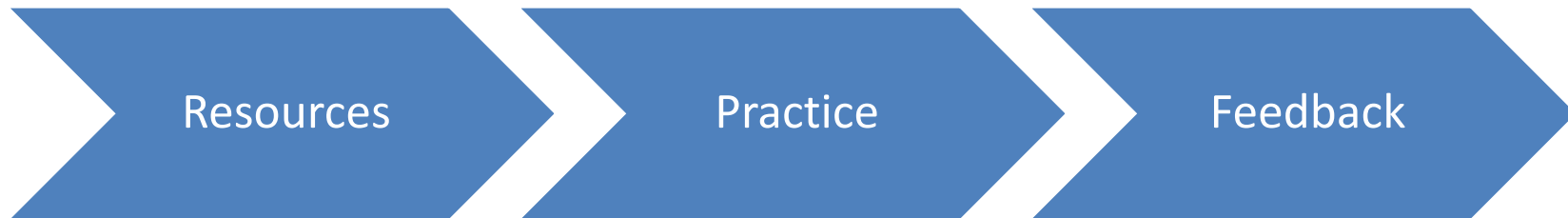
You can do the lessons in any order you want. For the slides to make sense, you should understand the "TEBOW IT" framework we introduce in Lesson 1. For each lesson, we review a homework assignment (using "TEBOW IT" approach) from the previous lesson. This content was created for a program we created to coach students to succeed in the technical interview. The materials were generated for an 8-week course that was interactive with students, but you may go through the lessons on your own pace.

- ☐ Lesson 1 - TEBOW IT New 

- ☐ Lesson 2 - Strings New 

- ☐ Lesson 3 - Arrays New 

# How will I succeed?



- We've created and found the best, (mostly) FREE comprehensive resources for interview preparation
- The most important part of preparation is **WRITING CODE...EVERY DAY!**
- You need to know whether your code works and is understandable by others

# How much code do I write in the interview?

- Technical screen
  - 30 minutes → 15-20 minutes of “coding”
- Full interview
  - 60 minutes → 30-50 minutes of “coding”
- Between 5 and 15 lines of code

# What programming language do I use?

- Whichever one you know best!



# How hard are the questions?

- Only one or two ways to solve the problem
- Tests your basic ability to write code and translate an idea into code
- These are “easier” questions than in the full interview

# Sample tech screen questions

**Example 1:** Write a function to reverse a string.

Example Java code:

```
public static String reverse ( String s ) {
    int length = s.length(), last = length - 1;
    char[] chars = s.toCharArray();
    for ( int i = 0; i < length/2; i++ ) {
        char c = chars[i];
        chars[i] = chars[last - i];
        chars[last - i] = c;
    }
    return new String(chars);
}
```

Example output for "Madam, I'm Adam": madA m'I ,madaM

**Example 3:** Print out the grade-school multiplication table up to 12x12

Java: (similar for C/C++)

```
public static void multTables ( int max )
{
    for ( int i = 1; i <= max; i++ ) {
        for ( int j = 1; j <= max; j++ ) {
            System.out.print ( String.format ( "%4d", j * i ));
        }
        System.out.println();
    }
}
```

Example output:

1	2	3	4	5	6	7	8	9	10	11	12
2	4	6	8	10	12	14	16	18	20	22	24
3	6	9	12	15	18	21	24	27	30	33	36
4	8	12	16	20	24	28	32	36	40	44	48
5	10	15	20	25	30	35	40	45	50	55	60
6	12	18	24	30	36	42	48	54	60	66	72
7	14	21	28	35	42	49	56	63	70	77	84
8	16	24	32	40	48	56	64	72	80	88	96
9	18	27	36	45	54	63	72	81	90	99	108
10	20	30	40	50	60	70	80	90	100	110	120
11	22	33	44	55	66	77	88	99	110	121	132
12	24	36	48	60	72	84	96	108	120	132	144

# Sample tech screen questions

**Example 4:** Write a function that sums up integers from a text file, one int per line.

Java:

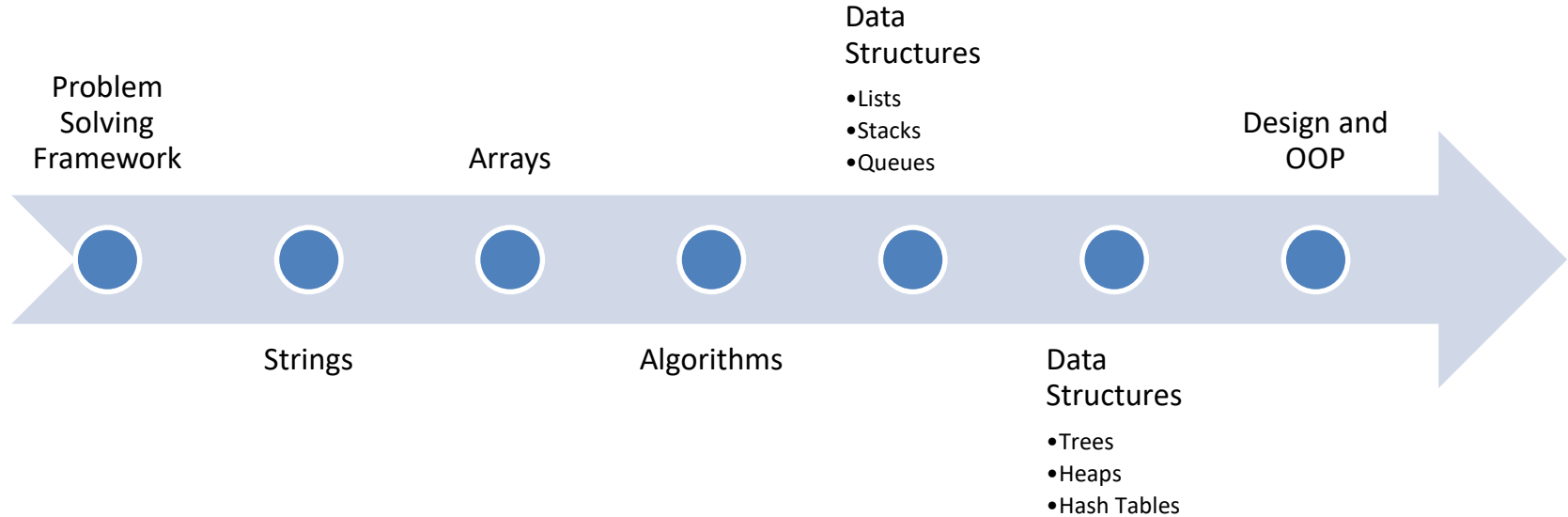
```
public static void sumFile ( String name ) {
    try {
        int total = 0;
        BufferedReader in = new BufferedReader ( new FileReader ( name ));
        for ( String s = in.readLine(); s != null; s = in.readLine() ) {
            total += Integer.parseInt ( s );
        }
        System.out.println ( total );
        in.close();
    }
    catch ( Exception xc ) {
        xc.printStackTrace();
    }
}
```

**Example 6:** Find the largest int value in an int array.

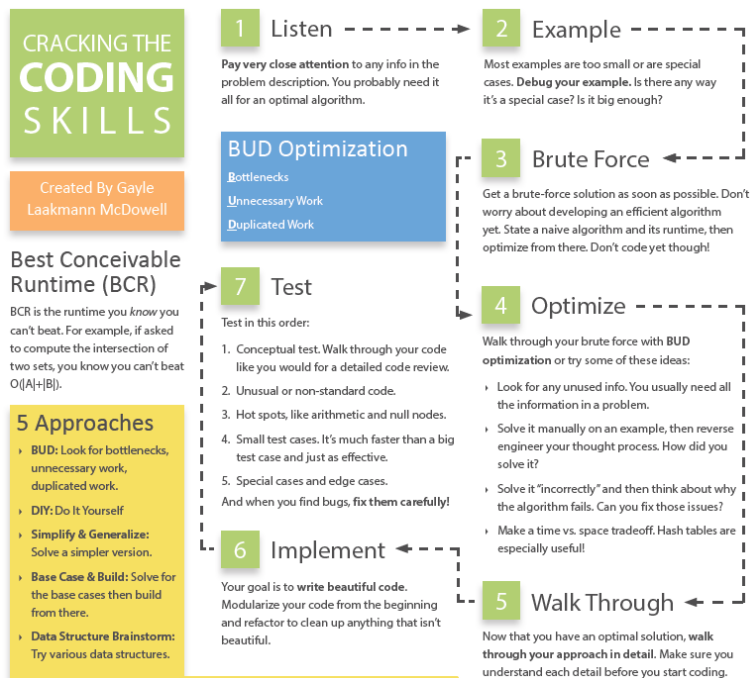
Java:

```
public static int largest ( int[] input ) {
    int max = Integer.MIN_VALUE;
    for ( int i = 0; i < input.length; i++ ) {
        if ( input[i] > max ) max = input[i];
    }
    return max;
}
```

# What topics should I know?



# How do I approach a coding question?



# How do I approach a non-coding question?



**CRACKING THE  
SOFT  
SKILLS**

Created By Gayle  
Laakmann McDowell

### Must Knows

- "So, tell me a bit about yourself..."
- "Why do you want to work here?"
- "Why should we hire you?"
- "Why are you leaving your current job?"
- "Where do you see yourself in 5 years?"
- "What do you do outside of work?"
- "What are your strengths and weaknesses?"

### Your Two-Minute Pitch

"I am a ... at ..."

"In college, I studied ... at ..."

"Then, I worked for ... where I ..."

"Then I worked for ... where I ..."

"In my current job, I've accomplished ..."

"Also, outside of work, I ..."

### Preparing for Behavioral Questions

Create Resume Grid → Pick Five Key Stories → Diagram Your Stories

Themes	Job 1	Job 2
Leadership & Influence	story	
Mistakes & Failures		story
Challenges	story	
Teamwork	story	story
Successes		story

*Coder? Add Bugs, Architecture, Optimization, Scaling.*

Stories	Story 1	Story 2
THEME(S)	e.g. Leadership, Challenge	
Nugget	"Sure, let me tell you about when I ..."	
Situation	Only the basics needed	
Action(s)	Expand here!	
Result	Prove it!	
THE POINT	What does it say about you?	





### Structured Answers

**N** Nugget. "Sure, let me tell you about the time that I ...". This focuses you and your interviewer on what you're about to say.

**S** Situation. Explain in just basics. The interviewer only needs enough details to understand what you did. Most people spend too much time here.

**A** Action(s). Detail what actions you took. "First, I ... Then, I ... And finally, I ...". This is where you should spend most of your time. Speak in bullets!

**R** Result. Succinctly explain the result of your efforts were. Prove that the impact was good with numbers or a clear success metric.



### Check Your Stories

- Are they substantial?
- Are they under-standable?
- Have you explained why you did it this way?
- What do they say about you?
- Are they really about you (not your team)?
- Have you covered all the themes?
- Can you answer, "What would you do differently?"

### Questions For Your Interviewer

- Things you want to know.
- Things that show passion/interest.
- Things that show skills.

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# Sample Interview Question

- We'll walk you through a good approach and solution to a real interview question

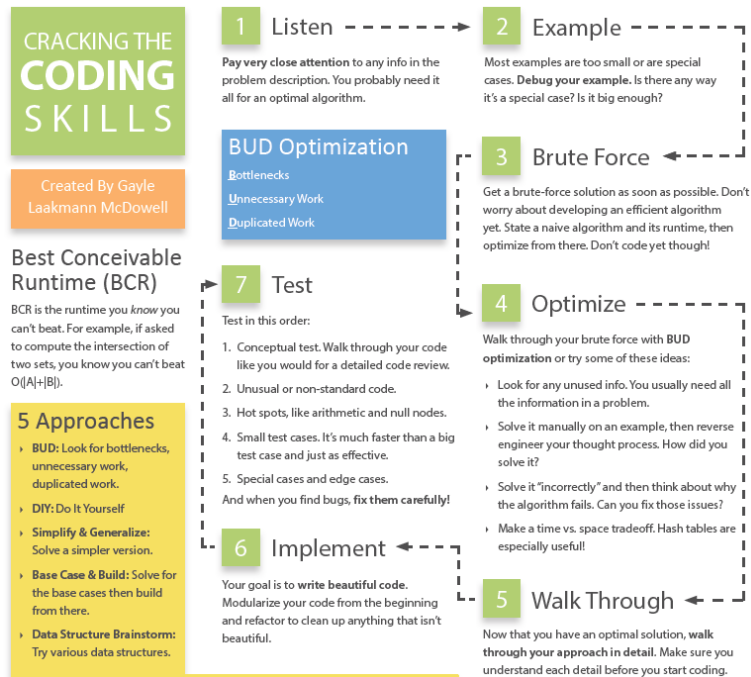


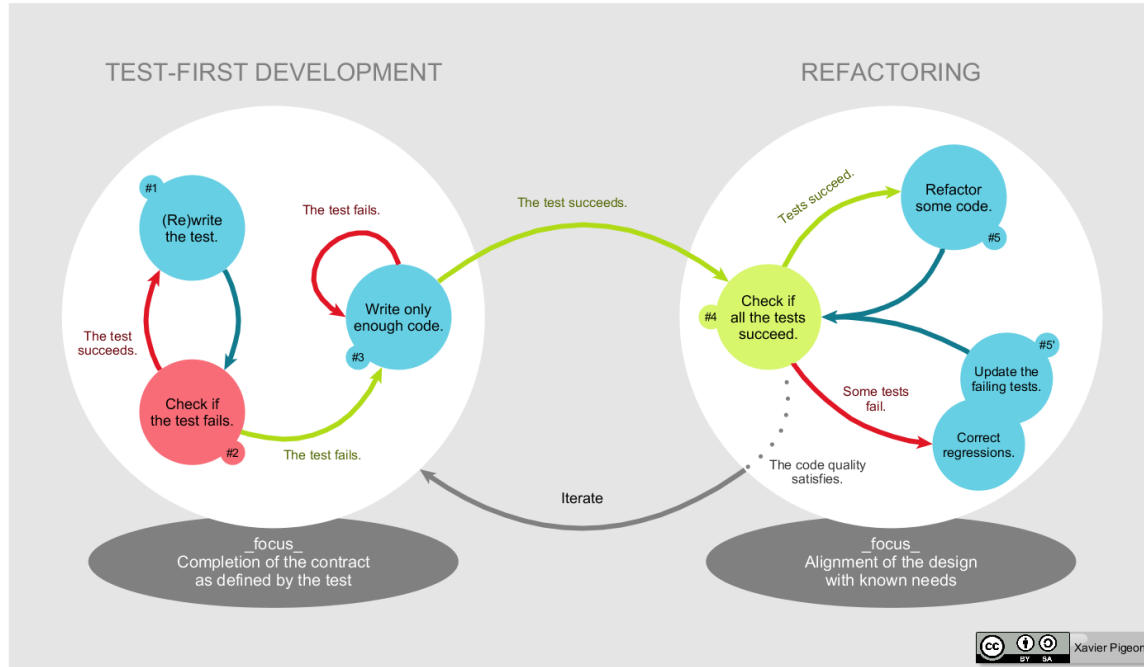
# TEBOW IT

- Talk
  - Examples
  - Brute Force
  - Optimize
  - Walk Through
- 
- Implement
  - Test

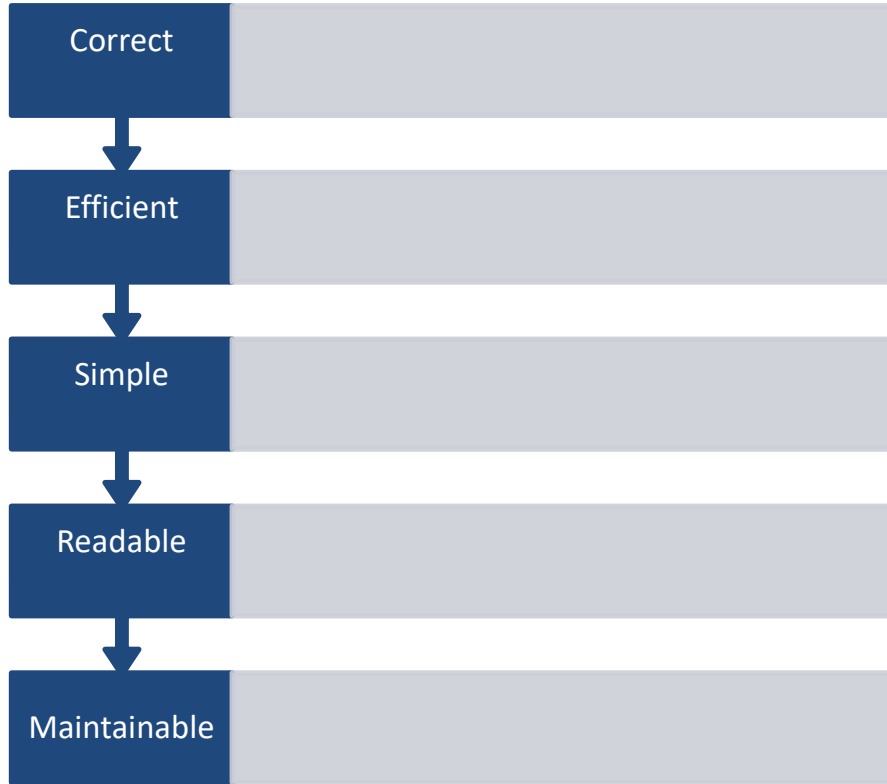


# Which one is easier to remember?





[https://en.wikipedia.org/wiki/Test-driven\\_development](https://en.wikipedia.org/wiki/Test-driven_development)



What is  
“good  
code”?

# Exercise: Integer Palindrome with a twist

A Palindrome is a number that reads the same forward as it does in reverse. For example, 12321 is a palindrome because it reads the same going from left to right as it does going right to left. Most numbers can be made into palindromes by taking the original number, reversing the digits, then adding the original number to the reversed digits. If that number isn't a palindrome, then repeat the same process until you reach a palindrome. Most numbers can be made into palindromes by repeating this process, but some numbers don't converge. During this process, if the number becomes larger than 1,000,000 and still doesn't form a palindrome, then return false.

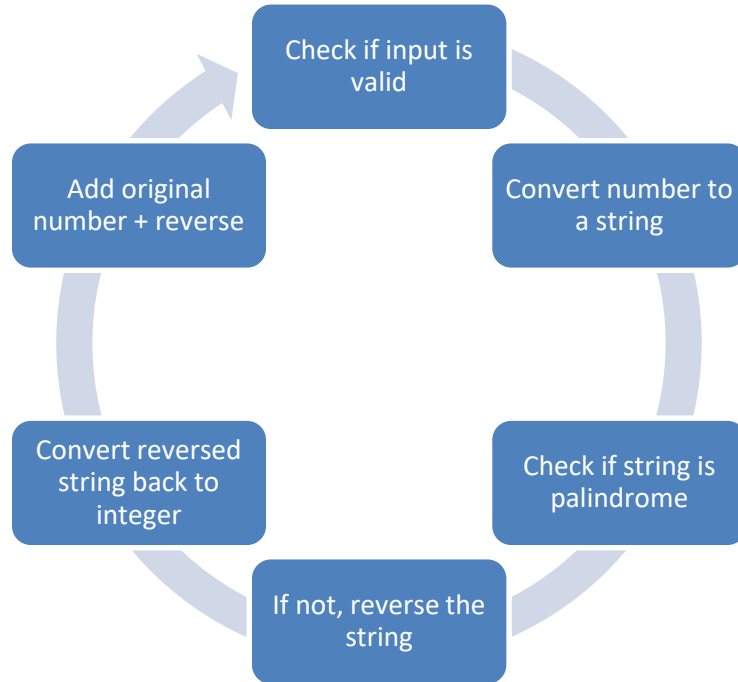
# T – Talk (/Listen/Clarify)

- The interviewer might not give you all the information you need
- It's easy to misunderstand what they are asking you to do
- Ask questions! Interviewers expect it!
  - What should be taken in as a parameter?
  - What should be returned?
  - Do I need to handle incorrect input?
  - What about negative numbers?
  - Return true/false or the number that was a palindrome?
  - If original number is palindrome, return?

# E – Examples (/Test/TDD)

Sample Input	Class	Out (is Palindrome?)
3	Single digit numbers	Yes
444	Numbers with same digits	Yes
121	Numbers < 1,000,000 that are already palindromes	Yes
999,998	Boundary/edge case	No
21 (21 + 12 = 33)	Number that requires reversing and adding to become a palindrome	Yes
1234	Sum of original digit + reverse <= 9	Yes
	Odd/even number of digits	
90,089 (90,089 + 98,009 = 188,098, 188,098 + 890,881 = 1,078,979)	Numbers that will never converge to palindrome	No
19 (19 + 91 = 110, 110 + 11 = 121)	Number that requires reversing and adding more than once to become a palindrome	Yes
1,000,0001	Invalid input ( $n < 0$ or $n > 1,000,000$ )	No

# B – Brute Force

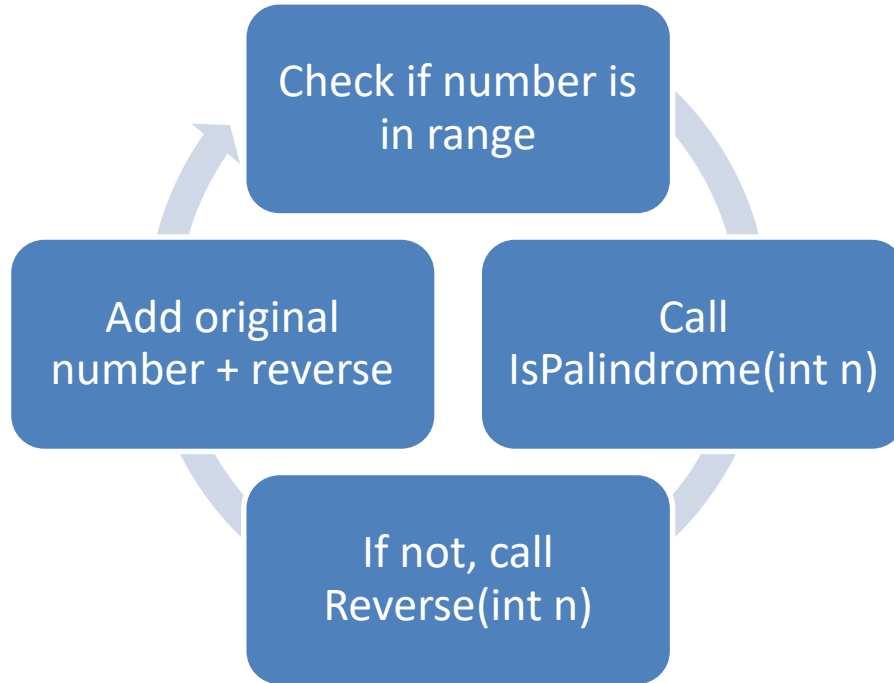


# O - Optimize

- What are the shortcomings of your current solution?
  - What is its runtime?
  - What are the storage requirements?
- Lots of conversions to/from integer/string. Can we do it without strings?
- Can you do it with/without recursion?



# W – Walk Through (Stage 1)



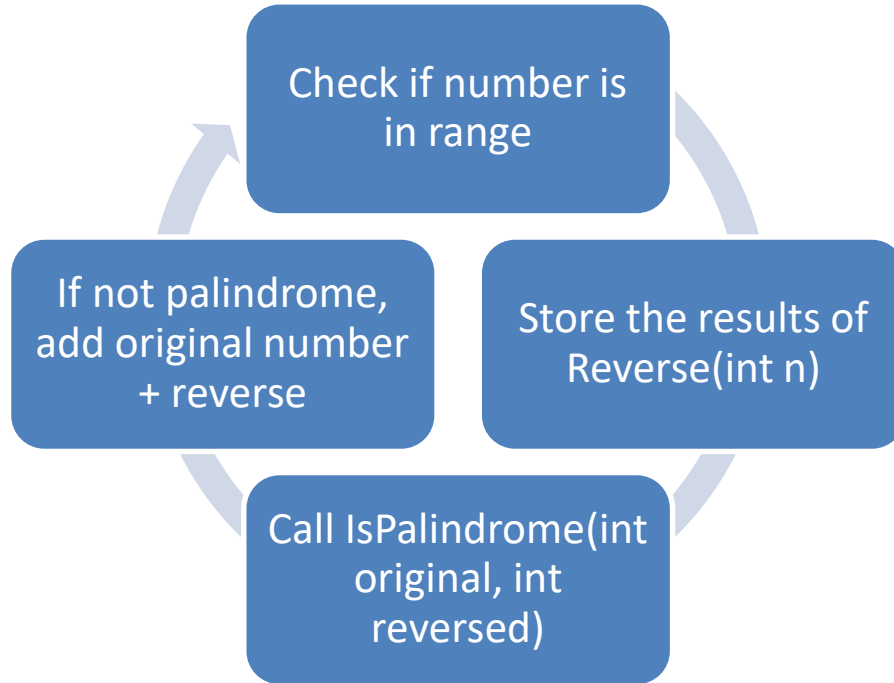
# Int Reverse(int n)

- Brainstorm: How do you reverse an integer?

# Bool IsPalindrome(int n)

- Brainstorm: How can you tell whether a number is a palindrome or not?
- Hint: can you use the results of Reverse()? Recall the problem definition: “A Palindrome is a number that **reads the same forward as it does in reverse.**”

# W – Walk Through (Stage 2)



1 reference | 0 changes | 0 authors, 0 changes

```
private static int Reverse(int original)
{
    int reverse = 0;
    while (original != 0)
    {
        int digit = original % 10;
        reverse = reverse*10 + digit;
        original = original / 10;
    }
    return reverse;
}
```

1 reference | 0 changes | 0 authors, 0 changes

```
private static bool IsPalindrome(int original, int reverse)
{
    return original == reverse;
}
```

4 references | 0 changes | 0 authors, 0 changes

```
public static bool IsOrCanBePalindrome(int number)
{
    const int MaxPalindrome = 1000000;

    while (number < MaxPalindrome)
    {
        int reverse = Reverse(number);
        bool isPal = IsPalindrome(number, reverse);
        if (isPal)
        {
            return true;
        }

        number = number + reverse;
    }

    return false;
}
```

# Demo: Learn and use GitHub

- <https://guides.github.com/activities/hello-world/>

Learn Git and GitHub without any code!

Using the Hello World guide, you'll create a repository, start a branch, write comments, and open a pull request.

[Read the guide](#)

[Start a project](#)

# Demo: Join the Slack channel

- [Click here to join](#)

## Confirm your email to join Microsoft Africa 2017 Interview Prep

Hello! Once you've confirmed your email address and set a password, you'll be the newest member of the Slack workspace **Microsoft Africa 2017 Interview Prep**. ✨

### Confirm Email

If you have any questions, simply reply to this email. We'd love to help.



**Microsoft Africa 2017 Interview Prep**

Workspace URL: [africa2017msftivprep.slack.com](https://africa2017msftivprep.slack.com)

## Join the Slack workspace Microsoft Africa 2017 Interview Prep

Full name

Display name (optional)

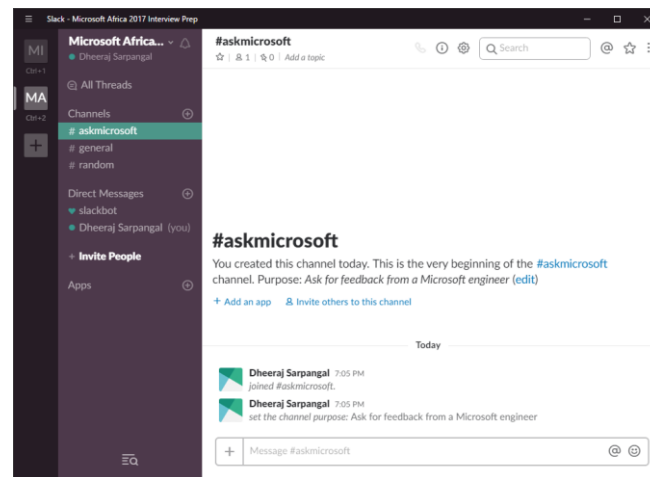
By default, Slack will use your full name — but you can choose something shorter if you'd like.

Password (required)

Passwords must be at least 6 characters long, and can't be things like *password*, *123456* or *abcdef*.

☒ It's ok to send me (very occasional) email about the Slack service.

Next >



# Technical Screen and Follow Up

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6. The final round interview event will take place in South Africa in the middle of November.



# Questions?

Please enter your questions in the IM window and we will answer them as best we can.

THANK  
YOU