#### Secure Software Development Life Cycle

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#### INTRODUCTION

The goal of a SDLC is to have a process that produces software with the highest quality and lowest cost in the shortest time.

SDLC includes a detailed plan for how to develop, alter, maintain, and replace a software system.

Our SDLC represent all the stages that any software maintained in-house should adhere to.

These stages were created from the perspective of various teams to ensure considerations of different teams sizes, programming languages, project management methodologies and workflows

# WHAT WAS THE PROBLEM?

- No standard process
- LOW QUALITY CONTROL
- No standard tools
- LITTLE COLLABORATION

## SOLUTION?

- **SDLC**: A DETAILED FRAMEWORK TO DEVELOP, BUILD, MAINTAIN, AND REPLACE A SOFTWARE SYSTEM.
- THE GOAL OF A SDLC :
  - PRODUCES SOFTWARE WITH THE HIGHEST QUALITY
  - AT THE LOWEST COST IN THE SHORTEST TIME POSSIBLE.
- Something missing
  - Security ?
- LEAVE TO THE END, CAN'T FIND BUGS, VULNERABILITIES, MORE EXPENSIVE AND MORE TIME CONSUMING TO FIX.



Essential that security be embedded in all stages of the process



Solution is collaborative between various faculties and services



Repetitive tasks should be automated where possible



Applicable to any project management methodology (Agile, Waterfall)

uOttawa's SDLC will provide a living document



Testing, testing, testing

CONSIDERATIONS FOR UOTTAWA'S SDLC



### THE RESULT...

## ANALYZE (NEW FEATURE)

•EVERY JOURNEY BEGINS WITH A SINGLE STEP. ANALYSIS IS THAT FIRST STEP IN OUR SDLC

•ANALYSIS IS A FUNDAMENTAL PHASE OF THE SDLC AND IS RESPONSIBLE FOR CREATING THE FOUNDATION OF TASKS THAT WILL BE PERFORMED, TESTED AND DEPLOYED IN LATER STAGES





## ANALYZE (BUG)

 Analysis is necessary not only for new features/requirements, but also for new bugs.
 This sub-stage defines our recommendation on how to analyze and report bugs in the life cycle after at least one iteration has been done



"A goal without a plan is just a wish" - Antoine de Saint-Exupéry PLAN

THE PLANNING STAGE ALLOWS TEAMS TO:

BETTER SCOPE THEIR WORK

PRIORITIZE TASKS

CONCEPTUALIZE A LOGICAL ORDER OF COMPLETING TASKS

## CODE

THE CODE STAGE IS THE MEAT OF THE PROCESS.

- THE SOFTWARE GETS DEVELOPED.
- THE APPLICATION IS TESTED, PREPARED FOR AUTOMATION AND BROUGHT TO LIFE.
- DEVELOPERS UTILIZE TEST SCENARIOS TO CREATE AND PERFORM UNIT TESTS, SECURITY TESTS AND REGRESSIONS TESTS.
- WE PROVIDE SUGGESTIONS FOR CODING BEST PRACTICES, GUIDELINES AND HELPER SCRIPTS.





#### BUILD

THE BUILD STAGE IS RESPONSIBLE FOR CREATING A RELEASABLE VERSION OF THE APPLICATION

AUTOMATION TOOLS ARE USED TO PROVIDE INTANGIBLE BENEFITS SUCH AS CONSISTENCY AND RECOVERY

IN ADDITION, AUTOMATION ALSO PROVIDES TANGIBLE BENEFITS SUCH AS RELEASE NOTES AND SOFTWARE ARTIFACTS TO PROVE YOU'RE A HUMAN, CLICK ON ALL THE PHOTOS THAT SHOW PLACES YOU WOULD RUN FOR SHELTER DURING A ROBOT UPRISING.



TEST

• The Test stage represents the tasks and tests performed by the QA Testers or BAs.

• TESTS PERFORMED HERE ARE DESIGNED TO COMPLEMENT THE TESTS PERFORMED BY THE DEVELOPERS IN THE CODE STAGE

• This includes DAST, UAT, accessibility testing and end-to-end testing.

• TESTING IN THIS STAGE PROVIDES A ROBUST AND SECURE PLATFORM AFTER EVERY RELEASE  ALWAYS IMPORTANT TO PREPARE AND VERIFY THAT RESOURCES ARE IN PLACE, PRE-CHECKS HAVE BEEN PERFORMED AND THERE ARE NO UNKNOWN OBSTACLES

• RELEASES ALLOW US TO DOCUMENT AND TRACK CHANGES THAT WILL BE DEPLOYED AND OUTLINE THE STEPS THAT WILL BE PERFORMED TO DEPLOY THE SOFTWARE (DEPLOYMENT PLAN)

## RELEASE



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#### OPERATE

•THE OPERATE STAGE DEFINES RESPONSIBILITIES FOR MONITORING AND MAINTAINING THE DEPLOYED SOLUTION, THIS INCLUDES:

- TASKS THAT SHOULD BE PERFORMED IN CASE OF FAILURES, ABNORMALITIES IN PERFORMANCE, ETC.
- PENETRATION TESTING FOR SECURITY
  VULNERABILITIES
- BACKUPS AND DISASTER RECOVERY PROTOCOLS
- DEPENDENCY SCANNING
- ARTIFACT MANAGEMENT
- MORE SELF-SERVICE AND INDEPENDENT OF A BUSY CENTRALIZED OPERATIONS TEAM

#### DEPLOY

•DEPLOY IS RESPONSIBLE FOR PUTTING THE APPLICATION INTO PRODUCTION.

• IT IMPLEMENTS THE DEPLOYMENT PLAN THAT WAS CREATED/UPDATED IN EARLIER STAGES.

• TESTS ARE DONE BEFORE THE DEPLOYMENT TO CONFIRM THAT THE ENVIRONMENT IS OPERATING AS EXPECTED AND TESTED AGAIN TO CONFIRM THAT THE DEPLOYMENT WAS SUCCESSFUL



#### Automation using pipelines







