EXTENDING ADOBE CAPTIVATE WITH JAVASCRIPT

ADVANCED TECHNIQUES FROM A WEB DEVELOPER'S PERSPECTIVE

HTTPS://GITHUB.COM/SDWARWICK/CAPTIVATE-DEMOS

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AUDIENCE

- Learning interaction designers

- Project managers / Course strategy developers

- Web Developers

- eLearning methodology strategists

- Content Authors

CONTEXT

- Captivate

- HTML projects

- "Responsive" design

- Windows 10 development environment

- JavaScript ECMA 2015

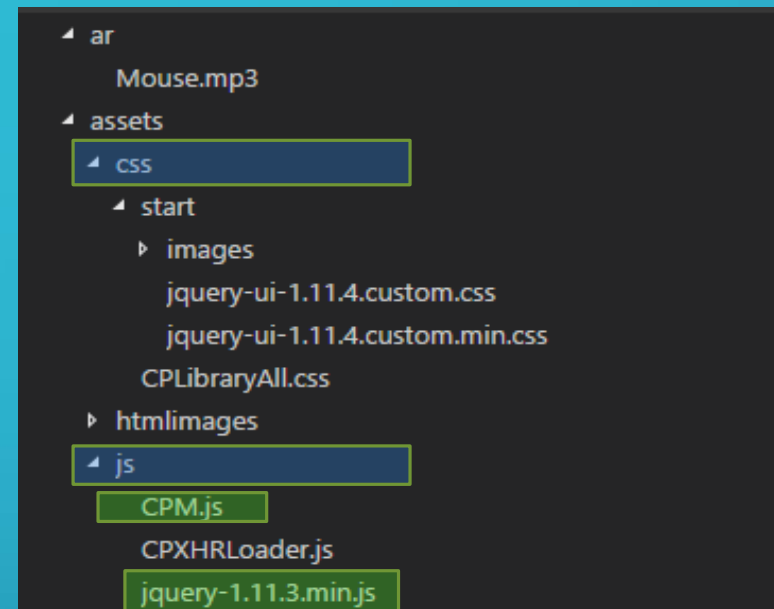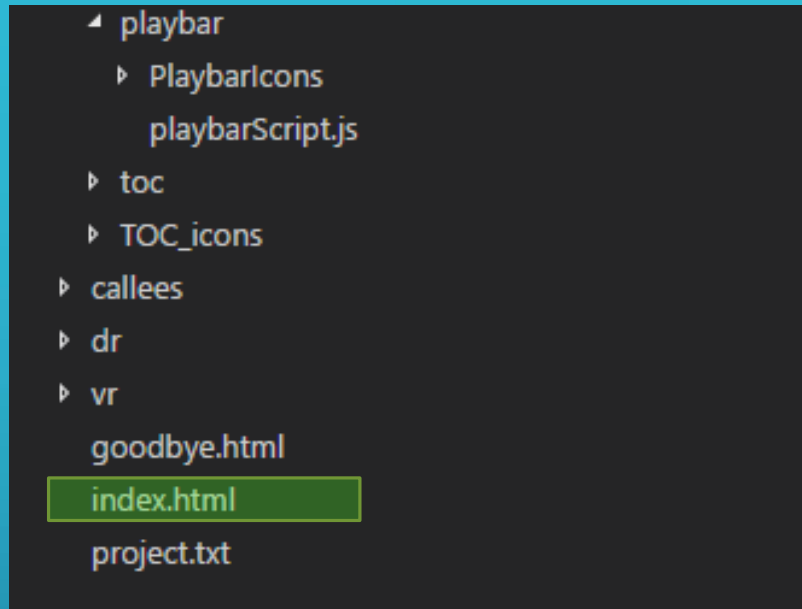- Chrome browser

- Notepad++ text editor

PLAN

- Captivate as a web development platform

- Efficient development of JavaScript/Captivate scripts

- Example Scripts
  - Fully custom quiz interactions
  - Full-screen mode
  - D&D

- Adobe documented vs. undocumented functions
  - Bridging between JavaScript and Captivate

- Overview of other possibilities with JavaScript

- Questions

CAPTIVATE FROM THE WEB DEVELOPERS PERSPECTIVE

- WYSIWYG website builders:
  - "Closed" builders generate sites that cannot easily be modified after being generated
    - Easy to get started building, limited access to potential of modern design
    - Weebly, Wix, Squarespace
  - "Open" builders support direct modification of generated sites & continued editing
    - Deeper understanding of web technologies needed
    - Pinegrow, Bootstrap Studio, Bootply
- Captivate – 90% closed / 10% open
- Custom features valuable for eLearning
- Reasonable strategy given initial target audience

ANATOMY OF A WEBSITE (CAPTIVATE FILE LAYOUT)

```
◢ playbar                          ◢ ar
  ▷ PlaybarIcons                       Mouse.mp3
    playbarScript.js              ◢ assets
  ▷ toc                             ◢ css
  ▷ TOC_icons                         ◢ start
▷ callees                               ▷ images
▷ dr                                      jquery-ui-1.11.4.custom.css
▷ vr                                      jquery-ui-1.11.4.custom.min.css
  goodbye.html                          CPLibraryAll.css
  index.html                      ▷ htmlimages
  project.txt                       ◢ js
                                        CPM.js
                                        CPXHRLoader.js
                                        jquery-1.11.3.min.js
```

- A module produced by Captivate is structured in a very common website design style

- A zipped module is simply a single-file version of this exact directory structure

- When a captivate module is loaded into an LMS, the zip file is simply uncompressed by the LMS

- Websites typically need to be "served" by a server program (apache/nginx) in case external content needs to be loaded

- When all content is inside the module directory, a browser can be used to view the website (file://)

ANATOMY OF A CAPTIVATE WEBSITE

HTML

CSS

Javascript

```
<body>
    <div id="mobile-sidebar" class="visible-xs
        <a class="mobile-sidebar-header" href="
            {{template "cogname" .}}
        </a>
        <div class="mobile-sidebar-content">
            <ul class="frow column-start">
                <ul class="frow centered menuSel
                    <li><a href="#overview">Over
                    <li><a href="#service">Servi
                    <li><a href="#customers">Cus
                    <li><a href="#about">About</
                </ul>
            </ul>
        </div>
    </div>
    <div id="click-cover" class="visible-xs lets
```

```
{
    background:url('../Playbar_icons/Play_icon.png
    width:58px;
    height:59px;
    float:left;
    position:absolute;
    left:50px;
}
.playButton:hover
{
    background:url('../Playbar_icons/Play_icon.png
    width:58px;
    height:59px;
    float:left;
    position:absolute;
    left:50px;
}
```

```
};
(function (i, m) {
    var b = function (a, c) {
        return new b.Instance(a, c || {})
    };
    b.defaults = {
        stop_browser_behavior: {
            userSelect: "none",
            touchAction: "none",
            touchCallout: "none",
            contentZooming: "none",
            userDrag: "none",
            tapHighlightColor: "rgba(0,0,0)"
        }
    };
    b.HAS_POINTEREVENTS = i.navigator.pointerE
    b.HAS_TOUCHEVENTS = "ontouchstart" in i;
```

- Same structures are seen in Captivate as in all websites
- "CPM.js" file contains
  - All content data – shapes, text, timing, placement, quiz
  - Captivate JavaScript Library that "runs" the website
  - Since the file is compressed, it is hard to decipher

WHY JAVASCRIPT?

- Most popular programming language – StackOverflow / Github

- Used for both user interaction in browser and business logic on server
  - Access all the power of the browser

- Completely free development environment

- All Browsers have powerful, built-in debugging tools

- Very fast design/test cycle - no "publishing/compiling" process

- Most profound change in learning process – learning on demand
  - Stackoverflow http://stackoverflow.com/insights/survey/2016
  - 2.7Million questions, 3.2Million answers in 2015
  - Thousands of tutorials

WHY USE JAVASCRIPT WITH CAPTIVATE

Upside

- All "Automation" functions in one place – Model/View/Controller Architecture
- JavaScript can control any aspect of UI
  - Change shape properties, display notifications, react to any user event
  - Create custom quiz interactions, unique animations etc..
- JavaScript functions can be debugged while the presentation is running, unlike advanced actions
- Many online tutorials for using JavaScript with Captivate
  - Large subject area, no tutorial is can be comprehensive – point solutions and examples

Downside

- Steeper learning curve – HTML/CSS/Jquery/Captivate
- Lots of cool stuff is undocumented by Adobe, discovered and published by developers

HOW TO WORK EFFICIENTLY WITH JAVASCRIPT

- Internally supported approach: Use built-in JavaScript script window

  - No syntax checking

  - Must re-publish module to update

  - Hard to maintain, code is sprinkled throughout the modules
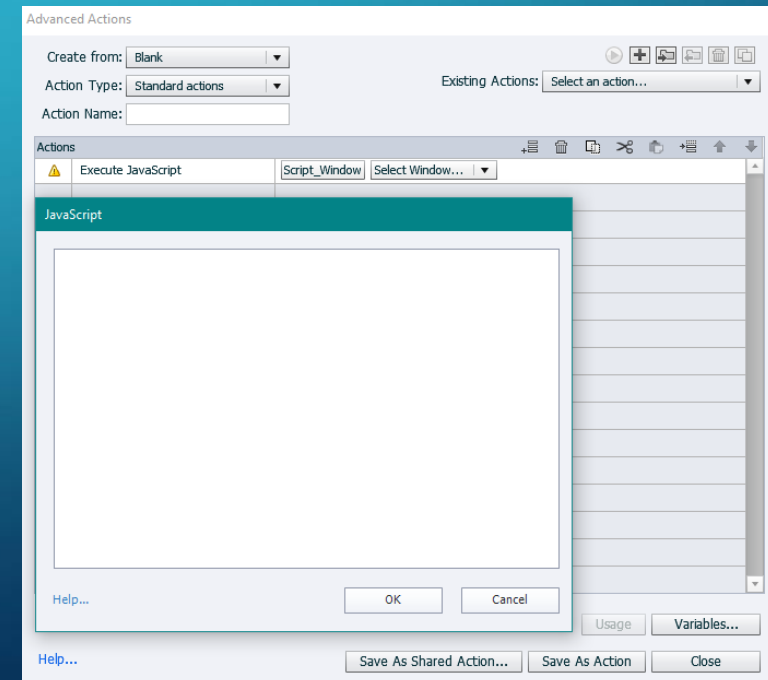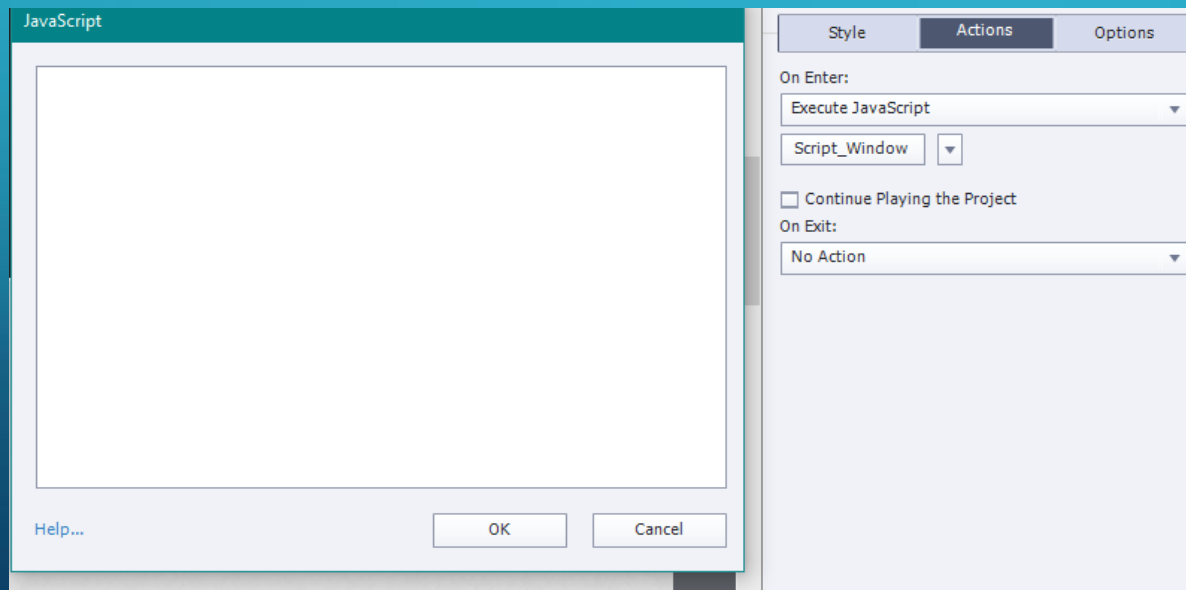
HOW TO WORK EFFICIENTLY WITH JAVASCRIPT

Better approach:

- External file holds all JavaScript functions

- Changes in file will be loaded whenever the module is viewed, no need to re-publish course – rapid development!

Downside:

- Files "outside" a module are only accessible when using http:// not file://
  - No Captivate "preview" mode - must "publish"
  - Use local web server
  - Move file inside module - automation

HOW TO WORK EFFICIENTLY WITH JAVASCRIPT

On enter execute JavaScript + continue playing project

```
if( !externLoaded ) {
$('body').append('<script src="../multichoice.js" async="false"></script>');

$(fontLink).appendTo("head");

externLoaded = true;
}
```
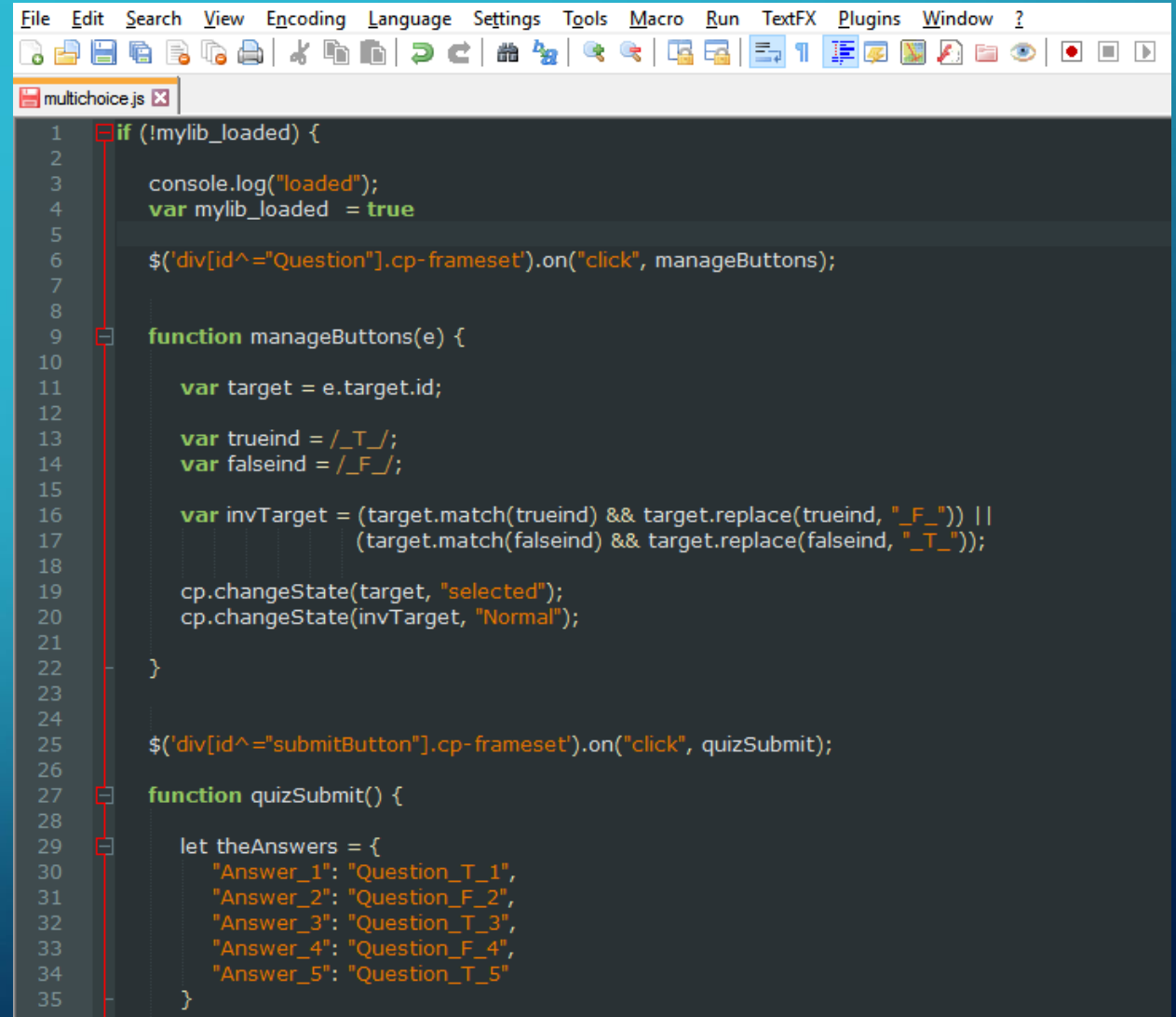
- JavaScript file is outside of course module, is not deleted when module is re-published

- Add to every slide in cases where LMS can jump past first slide

HOW TO WORK EFFICIENTLY WITH JAVASCRIPT

Notepad++ text editor as example

Far easier than built-in script window!

- JavaScript syntax and error highlighting

- Variable name validation

- Multiple windows, spell check etc.

DEBUGGING JAVASCRIPT WITH CHROME

F12 opens Chrome debugger!

Pauses execution of function, enables complete debugging environment in Chrome

```javascript
function quizSubmit() {

    debugger;

    let theAnswers = {
        "Answer_1": "Question_T_1",
        "Answer_2": "Question_F_2",
        "Answer_3": "Question_T_3",
        "Answer_4": "Question_F_4",
        "Answer_5": "Question_T_5"
    }

    for (answer in theAnswers) {
        rightAnswer = theAnswers[answer]
            theState = cp.getCurrentStateNameForSlideItem(rightAnswer);

        if (theState != "Normal") {
            cp.SubmitInteractions(answer, cp.QuestionStatusEnum.CORRECT, 0)
        }

    }

    cpCmndNextSlide = 1;

}
```

Step-by-step debugging – unlike advanced actions

Rules:

No scoring until "Submit" is pressed

True/false toggles correctly

Score for each answer may be different

+25 points for 4/5 right answers

+50 points for 5/5 right answers

Strategy:

All of the user interactions managed by JavaScript

Quiz will be scored and submitted by JavaScript
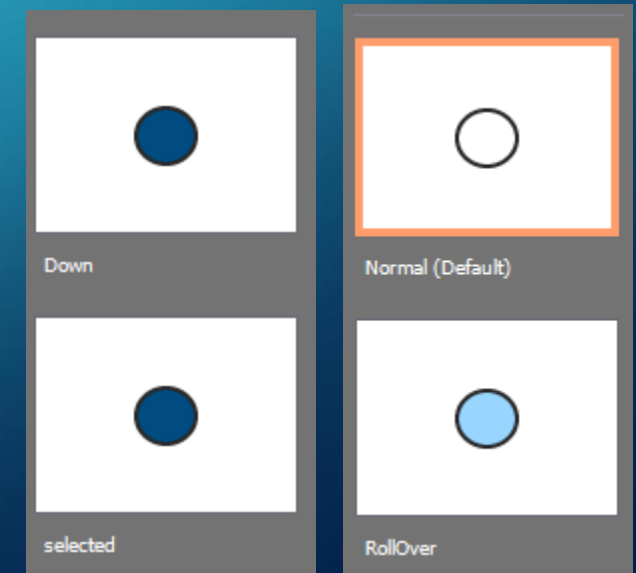
EXAMPLE – CUSTOM QUIZ INTERACTION

- Slide "on enter execute JavaScript": Add script file and links to fonts

```
$('body').append('<script src="../multichoice.js" async="false"></script>');

var fontLink = '<link href="https://fonts.googleapis.com/css?family=Calligraffitti" rel="stylesheet">';
$(fontLink).appendTo("head");
```

- All buttons are simple circle smartshapes
  with "use as button"

- Add an additional state called "selected"
- This will be controlled by JavaScript

EXAMPLE – CUSTOM QUIZ INTERACTION

- The shapes are labeled using a regular pattern that will be easily distinguished in the JavaScript Code

- The hidden answer buttons are all set to "Include in Quiz" and points can be assigned to each answer

- Add variables to enable connection between JavaScript and Captivate

- That's it.. no advanced actions

EXAMPLE CUSTOM QUIZ INTERACTION - TOGGLE

```javascript
$('div[id^="Question"].cp-frameset').on("click", manageToggleButtons);


function manageToggleButtons(clickedButtonObject) {

    // get shpe id of the clicked button,  this will be "selected"
    var targetID = clickedButtonObject.target.id;

    // create the name of the button you need to toggle to "unselected"
    if ( targetID.match(/_T_/) ) {
        var invTargetID = targetID.replace(/_T_/, "_F_")
    }


    if ( targetID.match(/_F_/) ) {
        invTargetID = targetID.replace(/_F_/, "_T_")
    }


    // captivate undocumented function to change state of object
    cp.changeState(targetID, "selected");
    cp.changeState(invTargetID, "Normal");

}
```

Find all buttons that start with the word "Question".   When clicked, call "manageToggleButtons function

Take the name of the button that was pressed, changes any "_T_" to "_F_" and any "_F_" to "_T_"

Call an undocumented captivate function "cp.changeState" to toggle between the "Normal" view and the "selected" view

Over the years, many people have contributed to weeding through the CPM.js code to find these functions

EXAMPLE CUSTOM QUIZ INTERACTION - SCORING

```javascript
$('div[id^="submitButton"].cp-frameset').on("click", quizSubmit);

function quizSubmit() {

    //debugger;

    // these are defined in captivate and used in analysis
    numberOfRightAnswers = 0;
    numberOfQuestions = 0;
    baseScore = 0;
    baseMaxScore = 0;
    bonusScore = 0;
    bonusMaxScore = 0;

    // the right answer button is selected, signal this internal button
    var theRightAnswers = {
        "Question_T_1" : "Answer_1",
        "Question_F_2" : "Answer_2",
        "Question_T_3" : "Answer_3",
        "Question_F_4" : "Answer_4",
        "Question_T_5" : "Answer_5"
    }
```

- The first line triggers the quiz submit function for the button with the ID "submitButton"

- Variables defined in captivate can be directly used in JavaScript!

- The correct answers are defined by which of the question buttons were set to state "selected"

- If the correct answer is selected, which hidden button should be activated?

EXAMPLE CUSTOM QUIZ INTERACTION - SCORING

```javascript
// the right answer button is selected, signal this internal button
var theRightAnswers = {
    "Question_T_1" : "Answer_1",
    "Question_F_2" : "Answer_2",
    "Question_T_3" : "Answer_3",
    "Question_F_4" : "Answer_4",
    "Question_T_5" : "Answer_5"
}

//check each of the right answer button for state, if selected,  signal to captivate
for (rightAnswerButton in theRightAnswers) {

    numberOfQuestions = numberOfQuestions +1;
    rightAnswerSenderButton = theRightAnswers[rightAnswerButton];

    // get quiz value for this answer - this is obscure but works
    answerObjectID = cp.D[rightAnswerSenderButton].qnq;
    answerValue = cp.D[rightAnswerSenderButton + "q" + answerObjectID].w;

    //add to max base score
    baseMaxScore = baseMaxScore + answerValue;


    theState = cp.getCurrentStateNameForSlideItem(rightAnswerButton);


    if (theState == "selected") {
        // undocumented function for signalling to a quiz button
        cp.SubmitInteractions(rightAnswerSenderButton, cp.QuestionStatusEnum.CORRECT, 0)
        numberOfRightAnswers  = numberOfRightAnswers +1;
        baseScore = baseScore + answerValue;
    }

}
```

When writing code, try to keep things flexible..

- Determine maximum number of questions, maximum score, answered questions and score values on the fly

- Here's how to get the value of a quiz button

- Here's how to find the state of a slide object

- If the right button was selected then we call another undocumented function that signals to captivate that an answer was given correctly.

EXAMPLE CUSTOM QUIZ INTERACTION - SCORING

```
// add bonuses
rightAnswerSenderButton = "Bonus_25"
answerObjectID = cp.D[rightAnswerSenderButton].qnq;
answerValue = cp.D[rightAnswerSenderButton + "q" + answerObjectID].w;
bonusMaxScore = bonusMaxScore + answerValue;

if (numberOfRightAnswers >= 4) {
    cp.SubmitInteractions(rightAnswerSenderButton,
                          cp.QuestionStatusEnum.CORRECT, 0);
    bonusScore = bonusScore + answerValue;
}

rightAnswerSenderButton = "Bonus_50"
answerObjectID = cp.D[rightAnswerSenderButton].qnq;
answerValue = cp.D[rightAnswerSenderButton + "q" + answerObjectID].w;
bonusMaxScore = bonusMaxScore + answerValue;

if (numberOfRightAnswers == 5) {
    cp.SubmitInteractions(rightAnswerSenderButton,
                          cp.QuestionStatusEnum.CORRECT, 0);
    bonusScore = bonusScore + answerValue;
}

cpCmndNextSlide = 1;
```

Find quiz value for the bonus points by looking at the Captivate data

Award points based on some criteria - here it is at least 4 answers right

Here it is 5 answers right…

After done, signal to move to next slide by simply setting the "next slide" flag variable

EXAMPLE – CUSTOM QUIZ INTERACTION

Why is this example important?

- Other than labeling the buttons, setting question values and loading the external JavaScript module, no advanced actions or special processing is needed

- The scoring is completely general. Any set of button presses can be used to generate a specific quiz result

- Scoring doesn't happen for any of the quizzing until the interaction is complete

- Custom interactions need not be limited to one "slide"

- Although not shown, at any point in the process, additional information can be given to the user

- Other measures can be made along the way:
  - How many times has the user changed their score?
  - How long did it take before the user completed the quiz?

EXAMPLE – "FULL SCREEN" MODE

- Any button that has a name starting in "fullscreen" will activate this code

- Also works for presentations embedded in other applications (IFRAME)

```javascript
function fullScreenButton() {
    let j = $('[id^="fullscreen"]').on('click', function (e) {
        let i = parent.document.getElementsByTagName("iframe")[0]
            if (i == null) {
                i = document.getElementById("main_container")
            }
i.requestFullScreen && i.requestFullScreen();
            i.webkitRequestFullScreen && i.webkitRequestFullScreen();
            i.mozRequestFullScreen && i.mozRequestFullScreen();
            i.msRequestFullscreen && i.msRequestFullscreen();
    });
};
```

```javascript
function cancelFullScreenButton() {
    let j = $('[id^="stdscreen"]').on('click', function (e) {
        let i = parent.document;
            if (i == null) {
                i = document.getElementById("main_container")
            }
i.cancelFullScreen && i.cancelFullScreen();
            i.webkitCancelFullScreen && i.webkitCancelFullScreen();
            i.mozCancelFullScreen && i.mozCancelFullScreen();
            i.exitFullscreen && i.exitFullscreen();
    });
};
```

```javascript
fullScreenButton();
cancelFullScreenButton();
```

EXAMPLE – DRAG AND DROP
HTTPS://GITHUB.COM/SDWARWICK/CAPTIVATE-DEMOS

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EXAMPLE – DRAG AND DROP
HTTPS://GITHUB.COM/SDWARWICK/CAPTIVATE-DEMOS

"team"
Drop Target

| ⭐ | pool_shape |

⭐	qil
⭐	rnSup
⭐	Patient
⭐	budget
⭐	pharm
⭐	MDdisease
⭐	clerk
⭐	CMO
⭐	rncicu
⭐	RNInfect
⭐	SocialW
⭐	HKSup
⭐	Lab
⭐	resMD
⭐	hrSup
⭐	IT

"candidates"
Source Pool

All scoring functions in JavaScript
Each time a "candidate" is dropped, "game1drop()" is called

"team"
Object Actions

Accepted Drag Sources

☑ Accept All   Count: –1   On Accept : ◯ Replace   **JavaScript**

	Drag Source Type	Action
☑	candidates	Execute JavaScript

game1drop()

"team" correct
Answer pool

No.	Drop Target	Drag Source	Count
1	team	candidates	16

EXAMPLE – DRAG AND DROP
HTTPS://GITHUB.COM/SDWARWICK/CAPTIVATE-DEMOS

```javascript
// a call to this is added to interaction in drop target
function game1drop() {

    let iact = cp.DD.CurrInteractionManager.getActiveInteraction();
    current_target = iact.m_DsFrameSetDataID;


    team_count += 1;
    team_score = team_points[team_count];


    skill_score += knowledge_points[current_target];
    total_score = skill_score + team_score;


    setCss();

}
```

Let JavaScript figure out what source item was moved

Create scoring based on some criteria
 - count of dragged components
 - value score for team member

Give feedback by changing colors of shapes directly using CSS on shapes

UNDOCUMENTED CAPTIVATE FUNCTIONS AND DATA STRUCTURES..

The CPM.js library

- 25,000 JavaScript statements in the basic library to "run" a presentation
- 100,000+ statements to define all objects in a large presentation

CPM.js defines 100+ "top level objects/properties"

CP top object - defines 751 objects/properties

CP.D - all of the slide objects and quizzing information

CP.DD - drag/drop interaction data

CP.em - event manger

CP.movie – timing manager

Lots of other things, too much to even begin to describe..

- Animation
- Display timing
- Quiz handling
- Drag/Drop interactions
- LMS Reporting system..

CPM.js code is well organized with very descriptive top level function names

UNDOCUMENTED CAPTIVATE FUNCTIONS AND DATA STRUCTURES USED IN THESE TWO EXAMPLES

cp.changeState(targetID, state)

cp.getCurrentStateNameForSlideItem(targetID);

cp.show(targetID) , cp.hide(targetID)

cp.D[targetID].qnq   (find question data for targetID)

cp.D[questionID].w   (question score value – can read and write!)

cp.SubmitInteractions(targetID, cp.QuestionStatusEnum.CORRECT, 0)   (click answer button!)

cp.DD.CurrInteractionManager.getActiveInteraction()   (get activeDDInteraction)

activeDDInteraction.m_DsFrameSetDataID;   (id of last dropped target)

ActiveDDInteraction.OnResetButtonClicked(); (click DD reset button)

activeDDInteraction.undoAvailable (check if undo is available)

activeDDInteraction.OnUndoButtonClicked();

activeDDInteraction.OnSubmitButtonClicked();

cp.RuntimeMessageBox(document.getElementById("cpDocument"), 1)   (create a new message box)

DOCUMENTED CAPTIVATE/JAVASCRIPT FUNCTIONS

- https://helpx.adobe.com/captivate/using/common-js-interface.html

cpAPIInterface.getVariableValue	Returns the value of the given variable name.
cpAPIInterface.setVariableValue	Sets value of the given variable name
cpAPIInterface.play	Plays the movie.
cpAPIInterface.pause	Pauses the movie.
cpAPIInterface.stop	Stops the movie.
cpAPIInterface.rewind	Rewinds and plays the movie.
cpAPIInterface.next	Seeks the movie to the next slide.
cpAPIInterface.previous	Seeks the movie to the previous slide.
cpAPIInterface.fastForward	Increases the movie speed to 2x, then 4x and then back to normal on consecutive calls.
cpAPIInterface.getPlaySpeed	Returns movie playback speed in Frames per second (fps).
cpAPIInterface.getDurationInFrames	Returns the total number of frames in the movie.
cpAPIInterface.getDurationInSeconds	Returns the total duration of the movie in seconds.
cpAPIInterface.getVolume	Returns the volume of the movie in percentage.
cpAPIInterface.setVolume	Sets the volume of the movie.
cpAPIInterface.navigateToTime	Seeks to a particular time (milliseconds) in the movie.
cpAPIInterface.canNavigateToTime	Returns a boolean value showing whether you can seek to a particular time in the movie or not.
cpAPIInterface.getCurrentFrame	Returns the current frame of the movie.
cpAPIInterface.getCurrentSlideIndex	Returns the current slide index of the movie.
cpAPIInterface.getEventEmitter	Returns the handle to the cpAPIEventEmitter object.

DOCUMENTED CAPTIVATE/JAVASCRIPT EVENTS

- https://helpx.adobe.com/captivate/using/common-js-interface.html

cpAPIEventEmitter.addEventListener (event, function)
cpAPIEventEmitter.removeEventListener(event)
CPAPI_SLIDEENTER
CPAPI_SLIDEEXIT
CPAPI_STARTPLAYBARSCRUBBING
CPAPI_ENDPLAYBARSCRUBBING
CPAPI_INTERACTIVEITEMSUBMIT
CPAPI_MOVIEPAUSE
CPAPI_MOVIERESUME
CPAPI_MOVIESTART
CPAPI_MOVIESTOP
CPAPI_QUESTIONSKIP

FAR TOO MUCH TO "FIGURE OUT" IN CPM.JS

What is an efficient custom interaction development strategy?

- Build basic shapes and simple interactions that do not require advanced actions directly in Captivate

- Use Adobe Documented JavaScript library as starting place

- Developers familiar with HTML/CSS/JAVASCRIPT:

  - Build custom interactions decoupled from the Captivate data structures as much as possible

  - Bridge back into Captivate using the CPM.js library functions

  - Leverage undocumented features only as needed

JAVASCRIPT TO CAPTIVATE BRIDGE

- All shape information is found in the object CP.D
  - cp.D.shapename
  - cp.D.shapenamec
  - cp.D.shapenameq0

- Shape name is used as a base to build HTML
  <div id=theSquare>
  <canvas id=theSquarec>
  <div id=theSquare_vTxtHolder>
  <div id=re-theSquarec>
  <div id=theSquare_vTxtHandlerHolder>
  <div id=theSquareaccStr>

- Use these objects to create custom effects
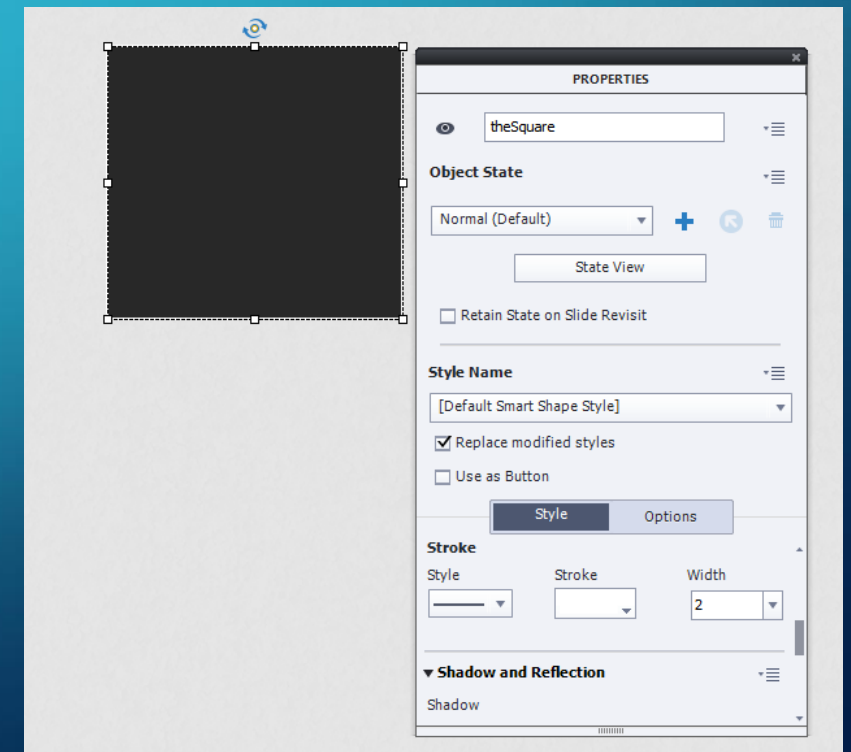
JAVASCRIPT TO CAPTIVATE BRIDGE

- All variables in captivate are now global JavaScript variables

  Example: cpInfoCurrentSlide == cpAPIInterface.getVariableValue("cpInfoCurrentSlide")

- Event-driven JavaScript functions (mouse clicks..)

  - Indirect: use actions and scripts in captivate (captivate dependency)

  - Direct: use JavaScript events tied directly to HTML objects (JavaScript only)

- Captivate monitors all variable values once every frame interval (1/30 sec)

  - Simply setting timing-control variables to "true" will cause changes in state

  - Example: cpCmndNextSlide = 1

- Quiz management has another data structure, too much to describe here

CPM.JS INTERNALS

Notepad++ JavaScript formatter

Convert compressed CPM.js to readable code

Save formatted version back into project

Enables modification & debugging

105 "TOP LEVEL" VARIABLES GENERATED BY CPM.JS

cp

cpXHRJSLoader
cpAPIInterface
cpAPIEventEmitter
cpCmndVolume
cpCmndMute
cpCmndCC
cpCmndNext
cpCmndNextSlide
cpCmndPrevious
cpCmndNextOnReview
cpCmndPreviousSlide
cpCmndPreviousOnReview
cpCmndPlaybarMoved
cpCmndShowPlaybar
cpCmndFastForward
cpCmndRewindAndPlay
cpCmndRewindAndStop
cpCmndGotoFrame
cpCmndGotoFrameAndResume
cpCmndGotoSlide

cpCmndGotoSlideAndResume
cpCmndGotoSlideByUIDAndResume
cpCmndResume
cpCmndPause
cpCmndExit
cpLockTOC
cpCmndInfo
cpCmndTOCVisible
cpInfoSlidesInProject
cpInfoFPS
cpInfoAuthor
cpInfoCompany
cpInfoEmail
cpInfoWebsite
cpInfoCopyright
cpInfoProjectName
cpInfoDescription
cpInfoCurrentFrame
_cpInfoCurrentFrame
cpInfoPrevFrame
cpInfoFrameCount
cpInfoPrevSlide

_cpInfoPrevSlide
cpInfoLastVisitedSlide
_cpInfoLastVisitedSlide
cpInfoCurrentSlide
cpInfoCurrentSlideIndex
_cpInfoCurrentSlide
cpInfoCurrentSlideLabel
_cpInfoCurrentSlideLabel
cpInfoSlideCount
cpInfoIsStandalone
cpInfoHasPlaybar
cpInfoCurrentSlideType
cpInfoIsResultSlide
cpInfoElapsedTimeMS
cpInfoEpochMS
cpInfoCurrentMinutes
cpInfoCurrentHour
cpInfoCurrentTime
cpInfoCurrentDay
cpInfoCurrentYear
cpInfoCurrentMonth
cpInfoCurrentDate

cpInfoCurrentDateString
cpInfoCurrentDateStringDDMMYYYY
cpInfoCurrentLocaleDateString
cpCmndGotoQuizScopeSlide
cpQuizInfoLastSlidePointScored
cpQuizInfoQuestionSlideType
cpQuizInfoAnswerChoice
cpQuizInfoMaxAttemptsOnCurrentQuestion
cpQuizInfoPointsPerQuestionSlide
cpQuizInfoNegativePointsOnCurrent
QuestionSlide
cpQuizInfoQuestionSlideTiming
cpQuizInfoQuizPassPoints
cpQuizInfoQuizPassPercent
cpQuizInfoTotalProjectPoints
cpQuizInfoTotalUnansweredQuestions
cpQuizInfoNoQuestionsPerQuiz
cpQuizInfoPointsscored
cpQuizInfoPretestPointsscored
cpQuizInfoPretestScorePercentage
cpQuizInfoTotalCorrectAnswers
cpInfoPercentage

cpQuizInfoTotalQuizPoints
cpQuizInfoAttempts
cpQuizInfoTotalQuestionsPerProject
cpQuizInfoQuestionPartialScoreOn
cpQuizScopeSlide
cpInQuizScope
cpQuizInfoPassFail
cpInfoCourseID
cpInfoCourseName
cpQuizInfoPreTestTotalCorrectAnswers
cpInReviewMode
cpQuizInfoPreTestTotalQuestions
cpQuizInfoPreTestMaxScore
cpInfoMobileOS
cpQuizInfoStudentID
cpQuizInfoStudentName
cpQuizHandledAll

WHAT ELSE DOES JAVASCRIPT OPEN UP?

- References to external content – fonts, libraries

- Real-time, group interactions with backend data sources (AJAX)

- Video game-level animations

- Dynamic Graphing and Charting

- Fine-grained experience measurement

- Pass information between parent/child windows

- Custom reporting to LMS/LRS

- Access to the entire web development community!

QUESTIONS?

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