Introduction to Programming

Class 20, 13 March 2017

Sit where you like today.

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Coding Warm Up

- Open computers to Task3-2 (the HW)
- With your table, on a piece of paper, complete the following task:
    - Write a program that prints to the console the following pattern:

```
#####                    CHALLENGE     #
####                                   ##
###                                    ###
##                                     ##
#                                      #
```

    - You can only use the lines
      var pattern = "";
      pattern = pattern + "#";
      pattern = pattern + "\n";
      console.log(pattern);
      Any number of for loops
    - You may want to try the following problems first as a decomposition strategy.

```
#####       THEN      #####
                      #####
                      #####
                      #####
                      #####
```

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Coding Warm Up

- Open computers to Task3-2 (the HW)
- With your table, on a piece of paper, complete the following task:

```
<script>
// #####

var pattern = "";

for (var i=0;i<5;i++) {
    pattern = pattern + "#";
}

pattern = pattern + "\n";
console.log(pattern);

</script>
```

```
<script>
// #####

var pattern = "";
for (var j=0;j<5;j++) {
    for (var i=0;i<5;i++) {
        pattern = pattern + "#";
    }
    pattern = pattern + "\n";
}

console.log(pattern);

</script>
```

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Coding Warm Up

- Open computers to Task3-2 (the HW)
- With your table, on a piece of paper, complete the following task:

```
<script>
var pattern = "";
for(var j=5;j>0;j--){
    for (var i=0;i<j;i++) {
        pattern = pattern + "#";
    }
    pattern = pattern + "\n";
}
console.log(pattern);
</script>
```

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Review War

```
/* This is a simplified version of the classic game of war. */

// Setup
var playerScore = 0;
var computerScore = 0;
var message;

// Welcome
alert("Welcome to the game of War. Press n for next hand or q to quit.");
// Get user response
var userChoice = prompt("What would you like to do (n/q):");

// Main game loop
while(userChoice != "q") {

    // Play next hand if player selects n
    if(userChoice == "n") {
        // Choose player card and computer card
        var MIN = 2;
        var MAX = 14;
        var playerNumber = Math.floor((MAX-MIN+1) * Math.random()) + MIN;
        var computerNumber = Math.floor((NAX-MIN+1) * Math.rancom()) + MIN;

        // Determine if should print number or letter for card for player
        var playerCard, computerCard;
        if(playerNumber < 11) {
            playerCard = "" + playerNumber;
        } else if (playerNumber == 11) {
            playerCard = "J";
        } else if (playerNumber == 12) {
            playerCard = "Q";
        } else if (playerNumber == 13) {
            playerCard = "K";
        } else if (playerNumber == 14) {
            playerCard = "A";
        }
        // Determine if should print number or letter for card for computer
        if(computerNumber < 11) {
            computerCard = "" + computerNumber;
        } else if (computerNumber == 11) {
            computerCard = "J";
        } else if (computerNumber == 12) {
            computerCard = "Q";
        } else if (computerNumber == 13) {
            computerCard = "K";
        } else if (computerNumber == 14) {
            computerCard = "A";
        }

        // Display hand
        message  = "Your Card\t\t\tOpponent's Card\n" + playerCard + "\t\t\t\t" + computer
        alert(message);

        // Decide and display who won
        if (playerNumber > computerNumber) {
            message = "You win the hand.";
            playerScore++;
        } else if (playerNumber < computerNumber) {
            message = "Your opponent wins the hand.";
            computerScore++;
        } else {
            message = "It's a push.";
        }
        alert(message);
    } else { // Something other than n was entered.
        alert("Invalid input.");
    }
    userChoice = prompt("What would you like to do (n/q):");

}
// Create closing message
message = "Your score is " + playerScore + ". Your opponent's score is " + computerScore +
// Determine who won
if(playerScore > computerScore) {
    message += "<br>You win!";
} else if (playerScore < computerScore) {
    message += "<br>You lose!";
} else {
    message += "<br>It's a tie.";
}

message += "<br>Goodbye.";

closingMessage = document.createElement("p");
closingMessage.innerHTML = message;
document.body.append(closingMessage);
```

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Task 3-4 Election Day

- Draft a comment outline for simpler task

```
1  /*
2   * Election Day
3   * Written for Intro to Programming
4   */
5
6  // Setup any necessary variables
7
8  // Welcome the user
9
10 // Enter next set of votes if user selects y
11
12 // Create closing message
13
14 // Determine who won and modify message
15
16 // Display message
```

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Task 3-4 Election Day

- Code simpler problem of asking for a single precinct

```
/* This program will count votes in a local election. */

// Setup
var polyVotes = 0;
var earnestVotes = 0;
var message;

// Welcome
alert("Election Day Vote Counting Program");


// Prompt user for number of votes
polyVotes += parseInt(prompt("Enter number of votes for Polly:"));
earnestVotes += parseInt(prompt("Enter number of votes for Ernest:"));


// Create closing message
message = "Votes for Polly: " + polyVotes + "<br>Votes for Ernest: " + earnestVotes;

// Determine who won
if(polyVotes > earnestVotes) {
    message += "<br>Polly wins!";
} else if (polyVotes < earnestVotes) {
    message += "<br>Earnest wins!";
} else {
    message += "<br>It's a tie. I demand a recount!";
}

closingMessage = document.createElement("p");
closingMessage.innerHTML = message;
document.body.append(closingMessage);
```

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Task 3-4 Election Day

- Code the Task

```
var message;

// Welcome
alert("Election Day Vote Counting Program");
// Get user response
var userChoice = prompt("Enter results for a precinct? (y/n)");

// Main program loop
while(userChoice != "n") {

    // Enter next set of votes if user selects y
    if(userChoice == "y") {

        // Prompt user for number of votes
        polyVotes += parseInt(prompt("Enter number of votes for Polly:"));
        earnestVotes += parseInt(prompt("Enter number of votes for Ernest:"));

    } else { // Something other than y or n was entered.
        alert("Invalid input.");
    }

    // Ask for another precinct
    userChoice = prompt("Enter results from another precinct? (y/n)");

}

// Create closing message
message = "Votes for Polly: " + polyVotes + "<br>Votes for Ernest: " + earnestVotes;

// Determine who won
if(polyVotes > earnestVotes) {
    message += "<br>Polly wins!";
} else if (polyVotes < earnestVotes) {
    message += "<br>Earnest wins!";
} else {
    message += "<br>It's a tie. I demand a recount!";
}
```