Spring 2017 MIS 333K System Project: Longhorn Bank

2 Version 1.0 | Last Updated January 25, 2017

Background

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- 4 Longhorn Bank is an Austin-area banking and investment firm. In the past, customers were forced to visit one of
- 5 their area locations to apply for accounts, transfer money, or get access to their investment products. Now,
- 6 they want to move into the online realm by creating a website to perform many of these functions.
- 7 The site will have a customer portal, while employees and managers will have a dedicated area to manage the
- 8 site and its functions. Customers can search through their account history, apply for accounts, transfer money,
- 9 and request loans and other investment products. Employees manage customers and maintain the website.
- 10 The system should be an MVC website using a SQL Server Database hosted on one of your team member's AWS
- 11 account. The website should also be hosted in an AWS account. You should consider adding your team
- members as administrators to the main AWS account.
- 13 Katie and the TAs will be your first contacts for requirements questions. Requirements are subject to
- change/clarification as the project progresses. Katie will have final say on everything. The Piazza discussion
- board will be the official medium for communication about requirements. No requirements change/clarification
- is official unless it has been posted on Piazza and tagged with the "project requirements" label.

17 Customer Functionality

- 18 A customer logs in with his email and password. Login is required for any customer pages that display account-
- 19 related information. Anyone who is not logged in should be greeted with a welcome page that advertises the
- 20 products that Longhorn Bank offers. There should be at least one link for new customers to apply for an
- 21 account.
- 22 Upon successful login, the customer should be redirected to an account management page, where a listing of
- their accounts is visible.
- 24 If a customer forgets his/her password, they should have an option to receive an email to reset their password,
- 25 but only after entering their correct email address and year of their birthday.

26 Create Account

- 27 First name, last name, address, email, password, phone number, and birthday are required. Address should
- include street address, city, state and zip code. Middle initial is optional.
- 29 After creating an account, the customer must apply for a banking product (checking account, IRA, etc.). If they
- 30 close the screen and come back later, they must be prompted to apply for a banking product before they can do
- anything else on the site (after they log in).

32 Modify/Manage Account

- 33 Customers should be able to view all their information: first name, last name, middle initial, address, city, state,
- zip, phone number, email. Passwords should not be visible.
- 35 Customers should be able to modify first and last name, middle initial, address, city, state, zip code, email, and
- 36 phone number.
- 37 Customers should be able to change their password, but only after entering the old password. Customers
- 38 should have to enter the new password twice to ensure they have entered the new password correctly.
- 39 Customers should be able to modify bank account names. They should be able to change the name of any
- 40 currently active account. Note that the account name and account number are distinct.

41 Customer Home Page

42 Customers should be able to view a summary of all banking products held by that customer.

- 43 Each account name and type should be listed, but only the last four digits of the account number should be
- 44 visible.
- 45 There should be a link for each account that takes the customer to the account detail page, which lists all
- 46 transactions associated with the account.
- 47 The balance of each account should be listed next to its name and account number.
- 48 Customer accounts should display the default account name, unless the customer decides to change it later.
- 49 Account Types
- 50 There are four basic "categories" of accounts available through Longhorn Bank: savings, checking, IRA and stock
- 51 portfolio. A customer may only have one stock portfolio and IRA, but they may have an unlimited number of
- 52 checking and savings accounts.
- Each account should have a link to a detail page where all transactions are listed.
- All accounts are assigned an account number which is 10 digits long. The first account number should be
- 55 1000000000. No two account numbers can be the same, and the account number should be automatically
- assigned by the system, incrementing the last account number by one.
- 57 Checking Accounts
- 58 Checking accounts are a standard account type for customers of Longhorn Bank.
- 59 The default name for checking accounts is "Longhorn Checking"
- 60 Only standard transactions can be applied to a checking account. These transaction types are: deposit,
- 61 withdrawal, and transfer.
- 62 Savings Accounts

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- 63 Savings accounts are the other standard account type for customers of Longhorn Bank.
- The default name for savings accounts is "Longhorn Savings"
- 65 Savings accounts are similar to checking accounts in that they can only contain standard transactions
- 66 Individual Retirement Accounts (IRAs)
- 67 An IRA is a special account type that customers can use to save for retirement.
- 68 A customer may only contribute to an IRA if the following conditions are met:
 - The customer is younger than 70 years old
 - The maximum contribution (\$5000) has not been made for this year. We will only be concerned with this year, so you don't need to keep track of when the contributions are made.
- 72 IRAs world similarly to checking and savings accounts in that they have an overall balance and can have funds
- 73 transferred between then and other accounts.
- A customer may transfer money out of an IRA into one of their other bank accounts at any age.
- 75 The contribution limit is not affected by transfers out of the account. For example, if I contribute \$3000 to my
- 76 IRA, and then transfer \$1500 to one of my other accounts, I can still only contribute \$2000 more (\$5000 limit -
- 77 \$3000 original contribution) without receiving an error message.
- 78 If a customer tries to contribute more than the contribution limit for an IRA, they should be presented with a
- 79 descriptive error message, and they system should offer to automatically modify the transaction to make the
- 80 contribution valid, or allow the customer to change the dollar amount themselves. However, a customer may
- 81 change his/her mind and choose not to contribute anything at all once they receive this message.
- 82 When transferring money out of an IRA, the distribution can be qualified or unqualified.
 - A distribution is qualified if the customer is older than 65
 - A qualified distribution faces no penalty for transferring the money

- An unqualified distribution has a maximum withdrawal amount of \$3000, and a \$30 service fee is charged for each unqualified distribution. The customer should have the option to add the fee to their withdrawal amount or have the total amount entered include the fee.
- Any fees associated with the withdrawal should be listed as a separate transaction and have "Fee" as the transaction type.

90 Stock Portfolios

- 91 A stock portfolio is an account type that customers may use to buy and sell stocks and funds offered through
- 92 Longhorn Bank

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- 93 Stock portfolios have a cash-value portion and a stock portion.
 - The cash-value portion is where gains, fees, bonuses and available cash (that can be used to purchase more stock) are located
 - The stock portion shows the number of shares and current price of stocks in a portfolio.
- These portions should be listed separately on the portfolio detail page.
 - The sum of these two portions constitutes the total value of a portfolio.
- 99 The starting stock types are: Ordinary Stocks, Index Funds, Exchange-Traded Funds (ETFs), Mutual Funds, and
- 100 Futures Shares.
- Managers have the choice to add additional stock/fund types, which are made available to customers who have
- 102 stock portfolios.
- 103 Customers can create a new stock portfolio through an option on their home page (after they log in).
- 104 Customers who meet managerial standards for stock portfolios are considered to have "balanced" portfolios.
- 105 A balanced stock portfolio must contain the following:
- At least 2 ordinary stocks
- At least 1 index fund
- 108 At least 1 mutual fund
- 109 Balanced portfolios will receive a 10% bonus, which is applied to all accounts when the manager runs the end-
- of-period tasks. The bonus is calculated on the current value of the stocks held by the customer.
- 111 The status of the portfolio (balanced or unbalanced) should be displayed at all times at the top of the portfolio
- 112 detail page.

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- 113 The "value" of an overall portfolio stock component may (but doesn't have to) include a transaction fee, which is
- a flat fee of \$10 for each stock purchase.
- 115 The "value" (balance) of a portfolio includes:
 - The current value of each stock, which is determined by multiplying the number of shares purchased by the current price of the stock.
- Transaction fees from previous purchases and sales of stock.
 - Any gains from previous sales of stock (see below).
- Any bonuses previously applied to the portfolio.
- Any available case in the cash-value portion of the portfolio
- Any other transactions that affect the cash-value portion of the portfolio.
- 123 The current value of the portfolio should be displayed on the portfolio detail page, along with the total fees
- incurred.
- 125 Applying for an Account
- 126 When a customer first signs up with Longhorn Bank, they must apply for one of the bank products listed above.
- 127 Customers who sign up but do not apply for an account (because they closed the window, navigated away, etc.)
- should not have access to any of the sites features before they apply for an account.

- 129 Accounts can be active or inactive, and only managers can change an account's settings
- A customer cannot re-activate an account that has been deactivated by a manager.
 - A manager can activate and deactivate any account for any reason, and this should be handled through a separate page on the manager's side.
- 133 When applying for a checking account, savings account, or IRA, customers will enter an initial deposit amount.
- 134 This amount is assumed to come from an outside source, so any amount of money is valid.
- 135 Initial deposits of more than \$5000 must be approved by a manager before being added to a customer's
- 136 account.

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- 137 The account detail page should show the available balance (does not include pending transactions), as well as
- any pending deposits/transactions that are awaiting manger approval.
- Only the account type and initial deposit amount are required to apply for an account.
- 140 After successfully applying for an account, the customer should see an appropriate confirmation message
- 141 Transactions
- 142 Transactions of any type for any account must have a date added by the customer. This date includes a month,
- 143 day, and year.
- 144 Every transaction should link to a corresponding transaction detail page, which displays all relevant information
- about the transaction.
- 146 Transaction Search
- 147 When a customer selects one of their accounts, they should see a transaction detail page that lists every
- transaction associated with that account. They should be able to search (without going to a new page) by the
- 149 criteria below.

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- 150 Transactions may be searched by any combination of the following: description, transaction type (deposit,
- withdrawal, transfer, etc.), amount, transaction number, or date.
- For description, customers should enter their search string in a textbox
 - Transaction type search should be done via a drop-down box
- For price search, customers should be able to search by the following parameters: \$0-\$100, \$100-\$200, \$200-\$300, \$300+ and a custom range (inputted by the customer)
 - For transaction number, customers should enter their search string in a textbox
- Date search should include options for: last 15 days, last 30 days, last 60 days, all available or a custom date range.
 - Search results should have the following information (in this order): Transaction number, transaction type, description, and amount.
- For all queries, display a record count
- Sort search results by ascending/descending transaction number, type, description, amount, and date.
- There should be a link for each transaction that will take you to a details page for that transaction.
- 164 Transaction Details Page
- 165 Each transaction should have a details page that includes the following information: description, transaction
- type, amount, transaction number, any comments added to the transaction by employees.
- The transaction detail page should have a section showing the last 5 similar transactions for the selected
- account, including the description and amount of each transaction. For example, the detail page for a
- withdrawal from a checking account should show the past 5 withdrawals from only that checking account.
- 170 The transaction detail page should have an option to dispute the transaction and include a short message for
- 171 management.

- 172 Deposits
- 173 Customers should have a dedicated page where they can make deposits to any of their accounts.
- 174 Customers should be able to choose which of their accounts to add money to, as well as how much money to
- 175 add.
- 176 Since we don't have physical branches, we will just take their word for it and give them any deposit amount they
- enter (admittedly, a terrible practice for the "real world.")
- 178 Deposits cannot be negative or zero.
- Deposits of over \$5000 are treated the same as when opening an account, meaning they must be approved by a
- manager before being added to the account balance.
- 181 Stock Transactions
- **182** *Purchasing Stock*
- 183 Customers have the option to purchase stocks and funds created by managers.
- 184 Stocks must be purchased using funds from a single checking or savings account held by the same customer.
- 185 The customer can also choose to purchase stocks using the cash-value portion of his/her stock portfolio.
- 186 Customers should only have the option to purchase stock once they have applied for a portfolio account and the
- account has been approved by a manager.
- 188 When customers are selecting a stock to purchase, they should see the stock's name, stock ticker symbol, type
- 189 (ordinary stock, index fund, etc.), current share price, and any fees that apply to the stock in question.
- 190 Fees are charged per transaction, not per number of shares.
- 191 Fees are listed as separate transactions in the cash-value portion of the portfolio and have the description "Fee:
- 192 [Stock Name]."

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- 193 On the same page used to select the stock, customers will enter the number of shares they wish to purchase.
- 194 Customers should also see a listing of their other accounts (checking, savings, and the cash-value of their
- 195 portfolio) and their current balances. Customers must select which of their accounts the funds will come from.
- 196 As with all other banking transactions, the customer must enter a date for the stock purchase.
- 197 After making these selections, customers will submit their stock purchase order.
 - If they do not have enough money to make the purchase, the transaction is not processed and they should see a descriptive error message.
 - If the transaction is successful, the money should be withdrawn from the selected account, and the transaction should be listed as Type: "Withdrawal" and Description: "Stock Purchase Account[Stock Portfolio Account Number]"
 - A successful transaction should also result in a descriptive confirmation message.
 - Once a transaction is processed, the customer should receive a completion message and have the
 option to return to their portfolio detail page, where they should see all the stocks in the portfolio,
 including the one they just purchased. Fees should be listed separately from the actual stock under the
 cash-value portion of the portfolio as Type: "Fee" and Description: "Fee for purchase of [stock name]."
 The portfolio value and status (balanced or unbalanced) should be updated accordingly.
- 209 If a customer already owns some of the stock being purchased, the transaction fee (if any) should still be 210 applied.
- 211 Purchases of the same stock will be treated as separate transactions and will be listed separately as well.
- 212 Selling Stocks
- 213 Customers should be presented with the option to sell any stock that is in their portfolio.

- 214 Customers can sell all or part of a certain set of shares. For example, if the customer has 100 shares, they can
- 215 choose to sell any number between 1 and 100 shares.
- 216 Shares are sold at the current market price, which should be pulled from a live (or close to live) web service such
- 217 as Yahoo! Finance.

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- 218 Customers should choose which of their stocks to sell from a table, which displays the name of the stock,
- 219 purchase price, current price, transaction fee, and number of shares held.
- 220 Each of the customers' stocks will have an option to show more details. This link can either take them to a new
- page or display the information on the same page. The details page will show the price of the stock on the
- 222 purchase date and the amount that the stock has increased or decreased. You are encouraged to include other
- 223 graphical enhancements such as color coding the increased/decreased amounts or including a graphical
- representation of the stock's value over time.
- 225 Customers cannot enter a sale date that is prior to the date of purchase.
- A customer must select which stock and the number of shares to sell, and then they should be presented with a summary screen that allows them to confirm or cancel the transaction.
 - This page should show the name of the stock being sold, the number of shares being sold, the number
 of shares remaining after the sale, any fees relating to the sale, and the net profit that will be gained
 from the sale.
 - Confirming the transaction will update the portfolio with the new stock amounts, and the customer should be shown a confirmation message. After the confirmation message, the customer should be redirected to the portfolio detail page, which should reflect the new portfolio value.
 - The portfolio should be updated as follows:
 - Each sale should be listed under the cash-value portion of the portfolio with the following fields:
 - o Type: Deposit
 - o Amount: Current value of the shares of stock sold
 - Description: Should include which stock was sold, the number of shares sold, initial stock price, current stock price, and total gains/losses
 - Transaction fees should be deducted from the cash-value portion of the portfolio and listed as Type: "Fee" and Description: "Fee for sale of [stock name]."
 - Any stock that is completely sold (remaining shares = 0) should no longer be displayed in the stock portion on the portfolio detail page.
 - Stocks that are not completely sold should have their quantities updated in the stock portion of the portfolio.
 - The portfolio value should be recalculated to reflect any change in value associated with the stock sale.
 - The portfolio status (balanced or unbalanced) should be updated accordingly.
- 248 Transfers
- 249 Funds can be transferred to and from any checking account, savings account, IRA, or cash-value portion of a
- 250 stock portfolio.
- 251 The IRA contribution limit still applies to money transferred into an IRA. (See IRA limit details above.)
- 252 Customers should have a dedicated page for making transfers between their accounts. The transfer page should
- 253 display two drop-downs, one for the originating account, and one for the destination account. This drop down
- should include the account name, account number (with all but the last four digits masked with Xs), and current
- 255 balance.
- 256 Transfers should have a customer-entered date that is applied to the transaction.
- 257 Customers will select the two accounts and enter an amount to be transferred.
- 258 Before completing the transaction, the customer should see a confirmation page which allows them to confirm
- or cancel the transfer.

- 260 Upon confirming the transfer, the respective transactions are recorded in both the originating account and
- destination account, and the account balances should be updated accordingly. The associated deposits and
- 262 withdrawals should be listed as Type: "Transfer" and Description: "Transfer [to/from] account [account
- 263 *number*]." The customer should also be presented with an appropriate confirmation message.
- 264 If a transaction violates any overdraft rule, or there is not enough money to complete the transfer, the customer
- should see an error message, and the transfer should not be recorded to either account.

266 Paying Bills Online

- 267 Customers should have a link on their home page to a dedicated page where they can pay their bills. This page
- should display a listing of all payees for the customer, their type, and a payment amount box and date field for
- each payee.
- 270 Payees
- A payee is an entity that can be paid by a customer, either when a bill is received or when the customer chooses
- to make a payment
- 273 Only customers can add payees.
- 274 Payees are NOT unique to the customer who creates them. Customers can select a payee that another
- customer has already added, or they can enter new information for a new payee.
- 276 Customers must choose to add a payee to their personal "Pay Bills" page (whether the payee has been created
- by another customer or not) before they can send a payment to that payee. For example, if John wants to pay
- 278 City of Austin, and Mary was the one who created City of Austin in the Longhorn Bank system, John has to
- 279 choose "Add Payee" and select "City of Austin." Only then should City of Austin show up on John's "Pay Bills"
- screen and be available for John to make a payment.
- A payee has the following information: Name, Address (street, city, state and zip), Phone Number, and Type
- 282 (Credit Card, Utilities, Rent, Mortgage, Other). All fields are required.
- 283 When a payee is successfully added, the customer should see a confirmation message.
- 284 When a customer clicks on the payee name on their "Pay Bills" page, they should be brought to a screen that
- displays all of the details for the payee. This page should include an option to edit any of the payee fields except
- 286 type.
- 287 Making Payments
- 288 When making a payment, customers enter the amount of the payment and the date of the payment.
- 289 On the "Pay Bills" screen, there should be a drop-down that shows the current checking and savings accounts
- 290 held by the customer, along with their current balances. Payments can only be made from checking or savings
- accounts.
- 292 Customers will select one of their accounts to use for making the payment.
- 293 Customers should have a place to enter the amount and date of the payment.
- 294 Customers can only overdraft their account (pay more bills than they have money for) if the overdraft is within
- 295 \$50 of their account balance. Overdrafts will be subject to fees as detailed below. Payments that cause an
- overdraft of more than \$50 should not be allowed, and the customer should be presented with an appropriate
- 297 error message.
- 298 Any successful payment should result in a confirmation message displayed to the customer.
- 299 Overdrafts
- 300 When making bill payments or transferring money out of an account, Longhorn Bank will loan the customer up
- 301 to \$50 if they do not have enough funds in their account to complete the transaction.

- Every overdraft is subject to a \$30 fee, which should be listed as a separate transaction with Type: "Fee" and
- Description: "Overdraft Fee." This fee contributes to the negative balance of the account, in addition to the
- 304 transaction that caused the overdraft.
- 305 If any transaction exceeds the \$50 overdraft limit, it should not be allowed and the customer should be
- presented with an appropriate error message describing what they need to change.
- 307 Customers with an overdrawn account should be presented with an error message on their main customer page
- 308 (right after they log in)
- 309 An account with a negative balance cannot be used to make any transfers or payments, even if the balance is
- 310 within the \$50 overdraft limit. Customers with a balance of \$0 can still make a payment/transfer that results in
- 311 an overdraft.
- Any transaction that results in an overdraft should trigger an email message to the client informing them of the
- 313 overdraft and the fee. The email should include the current account balance.
- 314 Customer Support
- 315 Customers can dispute any transaction they want. A dispute simply sends a message (within the system, not an
- email) to all managers asking them to review the transaction
- 317 Transaction disputes are initiated from the bottom of the transaction detail page. Once a customer chooses to
- 318 make a dispute, he/she should be presented with an area to make comments about the transaction, as well as
- 319 list the correct amount of the transaction.
- 320 If a customer feels that a transaction should be deleted, they can request that here.
- 321 All fields (comments, correct transaction amount, and delete transaction) are required to make a dispute.
- 322 Incomplete submissions should show an appropriate error message.
- 323 After completing all the required fields, the customer can submit his/her dispute. The message should then be
- displayed on the transaction detail page, but the customer can no longer make changes,
- 325 The customer should be presented with a confirmation message after submitting the dispute.
- 326 After submitting a dispute, the current status of the dispute should be displayed. The statuses are "Submitted,"
- "Accepted," "Rejected," and "Adjusted." A submitted dispute is one that has been submitted by a customer, but
- 328 has not yet been addressed by a manager. Accepted, Rejected, and Adjusted statuses are only applied once a
- 329 manager makes a decision regarding a dispute.
- 330 Email

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- 331 The system should be able to send messages to the customer's email address.
- 332 Customers get messages when:
 - They request their password and provide correct verifying information (see above).
- Their large deposit is approved by a manager
- Their dispute has been resolved by a manager
- Any transaction sends the account into overdraft status
- 337 The subject line of all emails should start with "Team [Number]:" to help the grader find the emails from your
- 338 team.

Employee Functionality

- Employees log in with their email and password. Any given email account should be for either a customer or an
- employee. Employees who are also customers of the bank will have to use separate emails for each of their
- roles with the bank. No customer should ever be able to view any of the employee pages.

- 343 Modify Employee Account
- 344 Employees can modify their address, phone number, and password only. Changing the password requires
- 345 entering the old password again.
- 346 Manage Customers
- Employees should be able to modify all customer accounts. This is the same functionality as the customer side.
- However, employees should be able to change the password without entering in the old one.
- Employees should be able to enable and disable customer accounts. A customer with a disabled account may
- still log in the only difference is that they cannot modify their accounts in any way. This includes, but is not
- 351 limited to, transferring funds, applying for accounts, and renaming accounts. All information is preserved, so if
- 352 the employee re-enables the account, all functionality is restored.
- 353 Transaction Search
- Employees should be able to search transactions just like customers can. Employees can also access transaction
- detail pages, but they should not be able to dispute any transactions.

Manager Functionality

- 357 Managers have all the functionality of regular employees, plus the following:
- 358 Home Screen

- 359 Upon logging in, managers should be directed to a home screen that presents the tasks awaiting their attention.
- These include approving large deposits and resolving any disputes
- 361 Resolving Disputes
- 362 When a manager chooses to view current disputes, he or she should be directed to a page that lists every
- 363 current dispute made by any customer.
- Resolved disputes (any dispute that a manager has responded to) should not be displayed originally, but the
- manager can chose to view all disputes ever made if they choose.
- 366 The dispute page should list the customer's first and last name, customer number, transaction name,
- 367 transaction amount, and the correct transaction amount (as entered by the customer when making the dispute).
- 368 The manager can then select an individual dispute, which will direct him or her to the dispute resolution page
- for that specific dispute. On the dispute page, the manager should see the customer's comment, the actual
- transaction amount, and the amount the customer believes the transaction should be.
- 371 The manager can choose to accept, reject, or adjust the customer's requested change, and may include a
- 372 comment if he or she so chooses.
- 373 If the manager adds a comment to the dispute, this should be displayed below the customer's comment on the
- transaction detail page, regardless of the status of the dispute.
- 375 Resolved disputes should show the email of the manager who resolved the dispute on the transaction detail
- 376 page.
- 377 If the dispute is accepted, the transaction amount should be updated to the customer's requested amount, and
- the customer should no longer be able to dispute that transaction.
- 379 If the dispute is rejected, the customer should be sent an email saying their dispute was rejected. The email
- should include any comments added by the manager.
- 381 If the dispute is adjusted, the manager will enter the new transaction amount, and the transaction will be
- updated to reflect that amount, not the amount entered by the customer.
- 383 Any disputed transaction that is changed should have "Dispute [dispute status]" appended before the existing
- transaction description.
- 385 Managers should be presented with an appropriate confirmation message after resolving any disputes.

386 Manage Employees

- 387 Only managers can create new employees.
- 388 Managers should be able to terminate existing employees. When an employee leaves the company, the
- 389 employee's information should be kept in the system in case the employee is re-hired at a later date. Fired
- 390 employees should be blocked from logging in and should receive an appropriate message.
- 391 Managers should be able to modify employee profiles. Managers can modify all fields, including changing
- passwords for all employees without having to re-enter the previous password.

393 Process Stock Portfolios

- 394 Balanced Portfolio Bonus
- 395 Managers should have a button on their home screen to process all stock portfolios to check if they are balanced
- or not and apply any bonuses that are applicable.
- 397 When the manager presses the "Process Stock Portfolios" button, the system should apply a bonus of 10% of
- 398 the overall portfolio value to any portfolio that matches the balanced portfolio template shown in the customer
- 399 section above.
- 400 The bonus should be listed as a separate transaction with Type: "Bonus" and Description: "Balanced Portfolio
- 401 Bonus."
- 402 Balanced portfolios will continue to receive bonuses each time a manager processes the portfolios as long as the
- 403 portfolio still matches a balanced portfolio template.
- 404 Managers should be presented with a confirmation message after processing stock portfolios.
- 405 Add New Stocks
- 406 Managers have the option to add new stocks, which can then be purchased by customers. Adding a stock
- 407 Stocks have five different types (ordinary stocks, index funds, exchange-traded funds (ETFs), mutual funds, and
- futures shares), which are selected from a drop-down by the manager.
- 409 Stocks are required to have a ticker symbol, type, and name. Ticker symbols must be unique.
- 410 Stocks can have an optional transaction fee.
- 411 After creating a new stock, the manager should see an appropriate confirmation message.

412 Data

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- 413 We will provide you with seed data for the database in the form of Excel spreadsheets. This seed data MUST be
- 414 pre-loaded on your site when grading begins or we will not be able to accurately grade your project. See Canvas
- 415 for the seed data.

Project Logistics

- 417 Requirements Changes/Clarification
- 418 As mentioned above, Katie and the TAs will be your first contacts for requirements questions. Requirements are
- subject to change/clarification as the project progresses. Katie will have final say on everything. The Piazza
- 420 discussion board will be the official medium for communication about requirements. No requirements
- 421 change/clarification is official unless it has been posted on Piazza and tagged with the "project_requirements"
- 422 label.

423 System Project Teams

- 424 The system project teams are made up of 3-4 class members. You will be required to submit feedback about
- 425 your teammates. If you fail to keep up with your teammates, you will be kicked off the team, and you will have
- 426 to do the entire system project by yourself. Katie reserves the right to adjust your grade based on reviews from
- 427 your group, so be a good teammate!

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- You will need to submit a link to your site's home page and a zipped version of the VS solution on Canvas by
- 430 12:00 noon on Friday May, 5th. Unauthorized changes to your website after 12 noon on May 5th will be
- considered violations of UT/McCombs academic integrity policies and will be reported to Student Judicial
- 432 Services.

433 Project Grading

- 434 Project grading will take place in the MOD Lab starting at 12:30pm on Friday, May 5th. At least one member of
- 435 your team should plan on being present for grading. Only one member of each team is allowed in the MOD Lab
- at any given time, although you may swap team members as needed. Project grading usually wraps up by
- 437 4:00pm. The IROM department will provide pizza and drinks around 2pm.

438 Project Awards

- The MIS 333K Team System Project includes cash awards for the top two teams. Teams will be judged by the
- instructor, who has the final say in the team standings. The first place team will receive \$2000 and the second
- place team will receive \$1000. The awards will be processed through the IROM office and will take several
- 442 weeks to arrive.