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Assignment 1

Logic and programming

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# Task 1 The Flow

## 1.1 The flow chart

A screen shot of a computer

Description generated with very high confidence

# Task2 The Roadmap

## 2.1 Pseudocode

1. Start of Program from login page.
2. Create variables called vUsername, vPassword, vIsChecked, dUsername, dPassword, dIsLockedOut, vIncorrectCnt. Set vIncorrectCnt to 0.
3. Read user’s request as click event
4. If user click on login button or link, go to step 7 otherwise go to 5.
5. If user click on Sign up button or link, go to step 24 otherwise go to 6.
6. If user click on Fogot password button or link, go to step 38 otherwise go to step 3.
7. Read username from screen and assign to vUsername.
8. Read password from screen and assign to vPassword.
9. Read check box of ‘Remember me’ and assign to vIsChecked.
10. If vUsername is not blank, go to step 12 otherwise go to step 11
11. Print “Enter a username” and go to step 3
12. Read user information from database and assign to dUsername, dPassword, dIsLockedOut.
13. If dUsername is blank, go to step 14 otherwise go to step 15.
14. Print “We can’t find the username” and go to step 3
15. If the value of dIsLockedOut is true, go to step 16 otherwise go to step 17
16. Print “This is locked out account”
17. If the value of vPassword is equal to the value of dPassword, go to step 21 otherwise go to step 18
18. Add 1 to vIncorrectCnt and print forgot password link on screen.
19. If the value of vIncorrectCnt is bigger than ‘X’ go to step 20 otherwise go to step 3
20. Update user information about locked out account in database to True and go to step 3
21. If the value of vIschecked is true, go to step 22 otherwise go to step 23.
22. Update data in browser to remain login status
23. Print user name on screen. Log in is done.
24. Open sign up page if different page is on screen.
25. Create variables called vDob, vCustFname, vCustLname, vAnswer, Answer and assign answer of captcha question to Answer.
26. Read user information user entered from registration form on screen.
27. Assign first name to vCustFname, last name to vCustLname and date of birth to vDob.
28. Assign username user entered to vUsername and password to vPassword.
29. If the format of the value of vUsername is valid, go to step 31 otherwise go to step 30
30. Print “It is not valid format, please enter email address” and go to step 24.
31. Assign the answer user input for captcha question to vAnswer
32. If the value of vAnswer is equal to the value of Answer, go to step 34 otherwise go to step 33.
33. Print “Incorrect answer” and go to step 24.
34. Insert user information to database
35. If in database, there is already same user information, to go to 36 otherwise go to 37.
36. Print “You already registered, forget password?”
37. Sign up complete.
38. Open forgot password page, if different page is opened now.
39. Read username user input and set to vUsername.
40. Send email to the value of vUsername.
41. End.

# Task 3 The BeepBoop Conundrum

## 3.1 The BeepBoop program in Pseudocode

1. Start of program.
2. Create two variables, called **count** and **end**.
3. Create two more variables, called **a** and **b**.
4. Set **a** to the remainder of **count** divided by 3.
5. Set **b** to the remainder of **count** divided by 5.
6. If both **a** and **b** are equal to zero, print the word **BeepBoop** and jump to step 10.
7. If **a** is equal to zero, print the word **Beep** and jump to step 10.
8. If **b** is equal to zero, print the word **Boop** and jump to step 10.
9. Print the value of **count**.
10. If count is less then of equal to end, add 1 to count and jump to step 4.
11. Print the word **Done**.
12. End of program.

## 3.2 Explanation

Generally, this program repeatedly prints ‘Beep’, ‘Boop’, ‘BeepBoop’, the value of ‘count’ and at last time, displays ‘Done’ on the screen until the value of ‘count’ which is increased by 1 at every cycle, becomes bigger than the value of ‘end’. At every cycle, the program assigns the remainder of the value of ‘count’ divided by 3 to ‘a’ and the remainder of the value of ‘count’ divided by 5 to ‘b’. So, the values of ‘a’ make constant pattern which is [0,1,2] repeatedly and the values of ‘b’ show constant pattern of [0,1,2,3,4]. At every cycle, this BeepBoop program makes decision whether both of ‘a’ and ‘b’ are equal to zero, ‘a’ is equal to zero, or ‘b’ is equal to zero and at each case the program prints ‘BeepBoop’, ‘Beep’, and ‘Boop’ on screen. At the other case, the program shows the value of ‘count’ on screen. If the value of ‘count’ is set on 1 initially, whenever the number of cycle is multiple of three, the program prints ‘Beep’ and whenever the number of cycle is multiple of five, the program prints ‘Boop’ and whenever the number of cycle is multiple of fifteen, the program prints ‘BeepBoop’ instead of ‘Beep’ or ‘Boop’. After printing, if the value of count’ is less than or equal to the value of ‘end, the program adds 1 to ‘count’ and iterates again from assigning the remainder to ‘a’ and ‘b’. If the value of ‘count’ is bigger than the value of ‘end’, the program prints ‘Done’ and is ended.

## 3.3 Output of run case 1

| Times | count | end | a | b | A=0 and b=0 | A=0 | B=0 | Output | Process |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | 1 | 60 | 1 | 1 | FALSE | FALSE | FALSE | 1 | count = count + 1 |
| 2 | 2 | 60 | 2 | 2 | FALSE | FALSE | FALSE | 2 | count = count + 1 |
| 3 | 3 | 60 | 0 | 3 | FALSE | **TRUE** | FALSE | Beep | count = count + 1 |
| 4 | 4 | 60 | 1 | 4 | FALSE | FALSE | FALSE | 4 | count = count + 1 |
| 5 | 5 | 60 | 2 | 0 | FALSE | FALSE | **TRUE** | Boop | count = count + 1 |
| 6 | 6 | 60 | 0 | 1 | FALSE | **TRUE** | FALSE | Beep | count = count + 1 |
| 7 | 7 | 60 | 1 | 2 | FALSE | FALSE | FALSE | 7 | count = count + 1 |
| 8 | 8 | 60 | 2 | 3 | FALSE | FALSE | FALSE | 8 | count = count + 1 |
| 9 | 9 | 60 | 0 | 4 | FALSE | **TRUE** | FALSE | Beep | count = count + 1 |
| 10 | 10 | 60 | 1 | 0 | FALSE | FALSE | **TRUE** | Boop | count = count + 1 |
| 11 | 11 | 60 | 2 | 1 | FALSE | FALSE | FALSE | 11 | count = count + 1 |
| 12 | 12 | 60 | 0 | 2 | FALSE | **TRUE** | FALSE | Beep | count = count + 1 |
| 13 | 13 | 60 | 1 | 3 | FALSE | FALSE | FALSE | 13 | count = count + 1 |
| 14 | 14 | 60 | 2 | 4 | FALSE | FALSE | FALSE | 14 | count = count + 1 |
| 15 | 15 | 60 | 0 | 0 | **TRUE** | **TRUE** | **TRUE** | BeepBoop | count = count + 1 |
| 16 | 16 | 60 | 1 | 1 | FALSE | FALSE | FALSE | 16 | count = count + 1 |
| 17 | 17 | 60 | 2 | 2 | FALSE | FALSE | FALSE | 17 | count = count + 1 |
| 18 | 18 | 60 | 0 | 3 | FALSE | **TRUE** | FALSE | Beep | count = count + 1 |
| 19 | 19 | 60 | 1 | 4 | FALSE | FALSE | FALSE | 19 | count = count + 1 |
| 20 | 20 | 60 | 2 | 0 | FALSE | FALSE | **TRUE** | Boop | count = count + 1 |
| 21 | 21 | 60 | 0 | 1 | FALSE | **TRUE** | FALSE | Beep | count = count + 1 |
| 22 | 22 | 60 | 1 | 2 | FALSE | FALSE | FALSE | 22 | count = count + 1 |
| 23 | 23 | 60 | 2 | 3 | FALSE | FALSE | FALSE | 23 | count = count + 1 |
| 24 | 24 | 60 | 0 | 4 | FALSE | **TRUE** | FALSE | Beep | count = count + 1 |
| 25 | 25 | 60 | 1 | 0 | FALSE | FALSE | **TRUE** | Boop | count = count + 1 |
| 26 | 26 | 60 | 2 | 1 | FALSE | FALSE | FALSE | 26 | count = count + 1 |
| 27 | 27 | 60 | 0 | 2 | FALSE | **TRUE** | FALSE | Beep | count = count + 1 |
| 28 | 28 | 60 | 1 | 3 | FALSE | FALSE | FALSE | 28 | count = count + 1 |
| 29 | 29 | 60 | 2 | 4 | FALSE | FALSE | FALSE | 29 | count = count + 1 |
| 30 | 30 | 60 | 0 | 0 | **TRUE** | **TRUE** | **TRUE** | BeepBoop | count = count + 1 |
| 31 | 31 | 60 | 1 | 1 | FALSE | FALSE | FALSE | 31 | count = count + 1 |
| 32 | 32 | 60 | 2 | 2 | FALSE | FALSE | FALSE | 32 | count = count + 1 |
| 33 | 33 | 60 | 0 | 3 | FALSE | **TRUE** | FALSE | Beep | count = count + 1 |
| 34 | 34 | 60 | 1 | 4 | FALSE | FALSE | FALSE | 34 | count = count + 1 |
| 35 | 35 | 60 | 2 | 0 | FALSE | FALSE | **TRUE** | Boop | count = count + 1 |
| 36 | 36 | 60 | 0 | 1 | FALSE | **TRUE** | FALSE | Beep | count = count + 1 |
| 37 | 37 | 60 | 1 | 2 | FALSE | FALSE | FALSE | 37 | count = count + 1 |
| 38 | 38 | 60 | 2 | 3 | FALSE | FALSE | FALSE | 38 | count = count + 1 |
| 39 | 39 | 60 | 0 | 4 | FALSE | **TRUE** | FALSE | Beep | count = count + 1 |
| 40 | 40 | 60 | 1 | 0 | FALSE | FALSE | **TRUE** | Boop | count = count + 1 |
| 41 | 41 | 60 | 2 | 1 | FALSE | FALSE | FALSE | 41 | count = count + 1 |
| 42 | 42 | 60 | 0 | 2 | FALSE | **TRUE** | FALSE | Beep | count = count + 1 |
| 43 | 43 | 60 | 1 | 3 | FALSE | FALSE | FALSE | 43 | count = count + 1 |
| 44 | 44 | 60 | 2 | 4 | FALSE | FALSE | FALSE | 44 | count = count + 1 |
| 45 | 45 | 60 | 0 | 0 | **TRUE** | **TRUE** | **TRUE** | BeepBoop | count = count + 1 |
| 46 | 46 | 60 | 1 | 1 | FALSE | FALSE | FALSE | 46 | count = count + 1 |
| 47 | 47 | 60 | 2 | 2 | FALSE | FALSE | FALSE | 47 | count = count + 1 |
| 48 | 48 | 60 | 0 | 3 | FALSE | **TRUE** | FALSE | Beep | count = count + 1 |
| 49 | 49 | 60 | 1 | 4 | FALSE | FALSE | FALSE | 49 | count = count + 1 |
| 50 | 50 | 60 | 2 | 0 | FALSE | FALSE | **TRUE** | Boop | count = count + 1 |
| 51 | 51 | 60 | 0 | 1 | FALSE | **TRUE** | FALSE | Beep | count = count + 1 |
| 52 | 52 | 60 | 1 | 2 | FALSE | FALSE | FALSE | 52 | count = count + 1 |
| 53 | 53 | 60 | 2 | 3 | FALSE | FALSE | FALSE | 53 | count = count + 1 |
| 54 | 54 | 60 | 0 | 4 | FALSE | **TRUE** | FALSE | Beep | count = count + 1 |
| 55 | 55 | 60 | 1 | 0 | FALSE | FALSE | **TRUE** | Boop | count = count + 1 |
| 56 | 56 | 60 | 2 | 1 | FALSE | FALSE | FALSE | 56 | count = count + 1 |
| 57 | 57 | 60 | 0 | 2 | FALSE | **TRUE** | FALSE | Beep | count = count + 1 |
| 58 | 58 | 60 | 1 | 3 | FALSE | FALSE | FALSE | 58 | count = count + 1 |
| 59 | 59 | 60 | 2 | 4 | FALSE | FALSE | FALSE | 59 | count = count + 1 |
| 60 | 60 | 60 | 0 | 0 | **TRUE** | **TRUE** | **TRUE** | BeepBoop | count = count + 1 |
| 61 | 61 | 60 | 1 | 1 | FALSE | FALSE | FALSE | 61/Done |  |

## 3.4 Output of run case 2

| Times | count | end | a | b | A=0 and b=0 | A=0 | B=0 | Output | Process |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | 7 | 43 | 1 | 2 | FALSE | FALSE | FALSE | 7 | count = count + 1 |
| 2 | 8 | 43 | 2 | 3 | FALSE | FALSE | FALSE | 8 | count = count + 1 |
| 3 | 9 | 43 | 0 | 4 | FALSE | **TRUE** | FALSE | Beep | count = count + 1 |
| 4 | 10 | 43 | 1 | 0 | FALSE | FALSE | **TRUE** | Boop | count = count + 1 |
| 5 | 11 | 43 | 2 | 1 | FALSE | FALSE | FALSE | 11 | count = count + 1 |
| 6 | 12 | 43 | 0 | 2 | FALSE | **TRUE** | FALSE | Beep | count = count + 1 |
| 7 | 13 | 43 | 1 | 3 | FALSE | FALSE | FALSE | 13 | count = count + 1 |
| 8 | 14 | 43 | 2 | 4 | FALSE | FALSE | FALSE | 14 | count = count + 1 |
| 9 | 15 | 43 | 0 | 0 | **TRUE** | **TRUE** | **TRUE** | BeepBoop | count = count + 1 |
| 10 | 16 | 43 | 1 | 1 | FALSE | FALSE | FALSE | 16 | count = count + 1 |
| 11 | 17 | 43 | 2 | 2 | FALSE | FALSE | FALSE | 17 | count = count + 1 |
| 12 | 18 | 43 | 0 | 3 | FALSE | **TRUE** | FALSE | Beep | count = count + 1 |
| 13 | 19 | 43 | 1 | 4 | FALSE | FALSE | FALSE | 19 | count = count + 1 |
| 14 | 20 | 43 | 2 | 0 | FALSE | FALSE | **TRUE** | Boop | count = count + 1 |
| 15 | 21 | 43 | 0 | 1 | FALSE | **TRUE** | FALSE | Beep | count = count + 1 |
| 16 | 22 | 43 | 1 | 2 | FALSE | FALSE | FALSE | 22 | count = count + 1 |
| 17 | 23 | 43 | 2 | 3 | FALSE | FALSE | FALSE | 23 | count = count + 1 |
| 18 | 24 | 43 | 0 | 4 | FALSE | **TRUE** | FALSE | Beep | count = count + 1 |
| 19 | 25 | 43 | 1 | 0 | FALSE | FALSE | **TRUE** | Boop | count = count + 1 |
| 20 | 26 | 43 | 2 | 1 | FALSE | FALSE | FALSE | 26 | count = count + 1 |
| 21 | 27 | 43 | 0 | 2 | FALSE | **TRUE** | FALSE | Beep | count = count + 1 |
| 22 | 28 | 43 | 1 | 3 | FALSE | FALSE | FALSE | 28 | count = count + 1 |
| 23 | 29 | 43 | 2 | 4 | FALSE | FALSE | FALSE | 29 | count = count + 1 |
| 24 | 30 | 43 | 0 | 0 | **TRUE** | **TRUE** | **TRUE** | BeepBoop | count = count + 1 |
| 25 | 31 | 43 | 1 | 1 | FALSE | FALSE | FALSE | 31 | count = count + 1 |
| 26 | 32 | 43 | 2 | 2 | FALSE | FALSE | FALSE | 32 | count = count + 1 |
| 27 | 33 | 43 | 0 | 3 | FALSE | **TRUE** | FALSE | Beep | count = count + 1 |
| 28 | 34 | 43 | 1 | 4 | FALSE | FALSE | FALSE | 34 | count = count + 1 |
| 29 | 35 | 43 | 2 | 0 | FALSE | FALSE | **TRUE** | Boop | count = count + 1 |
| 30 | 36 | 43 | 0 | 1 | FALSE | **TRUE** | FALSE | Beep | count = count + 1 |
| 31 | 37 | 43 | 1 | 2 | FALSE | FALSE | FALSE | 37 | count = count + 1 |
| 32 | 38 | 43 | 2 | 3 | FALSE | FALSE | FALSE | 38 | count = count + 1 |
| 33 | 39 | 43 | 0 | 4 | FALSE | **TRUE** | FALSE | Beep | count = count + 1 |
| 34 | 40 | 43 | 1 | 0 | FALSE | FALSE | **TRUE** | Boop | count = count + 1 |
| 35 | 41 | 43 | 2 | 1 | FALSE | FALSE | FALSE | 41 | count = count + 1 |
| 36 | 42 | 43 | 0 | 2 | FALSE | **TRUE** | FALSE | Beep | count = count + 1 |
| 37 | 43 | 43 | 1 | 3 | FALSE | FALSE | FALSE | 43 | count = count + 1 |
| 38 | 44 | 43 | 2 | 4 | FALSE | FALSE | FALSE | 44/Done |  |