

TEST HARNESS

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Introduction:

My loan calculator is shown below. What follows details the testing I have performed on my project, as per the assignment spec.

I utilised the Foundation front-end framework created by Zurb for my front-end styling and formatting. (www.foundation.zurb.com)

I used Font Awesome CSS icons for styling my form. (www.fontawesome.io)

I believe I have achieved a grade of 65% in this assignment having fulfilled all the criteria to reach 60% and highlighted the smallest monthly repayment and ordered the table results accordingly, which is half the criteria for the 60-69% grade bracket. I have displayed my project well using the Foundation framework and presented the information clearly and presented numerous tests within this test-harness document.

Option	Interest Rate	Mortgage Length	Amount Borrowed	Amount Repayable	Monthly Repayment
B	3.7%	20	£100,000.00	£103,700.00	£5,185.00
A	3.8%	20	£100,000.00	£103,800.00	£5,190.00

Lowest monthly repayments are highlighted in Red.

Refresh Page

40%

Create an HTML form that requires the following information:

1. surname;
2. email;
3. phone number;
4. the size of any deposit;
5. the length of time that the user wishes to take out the loan for: allowed values are 10, 20 and 30 years.
6. annual salary in pounds;
7. how much the user wishes to borrow;
8. knowledge of if the user has an account with the building society (as this may allow a preferential deal).


Basic client side data validation is performed on all of the above data, and errors are reported to the client in a simple manner. Details of tests are recorded in test-harness.pdf.

Targets Met:


- Client side data validation is performed on every input
- User is alerted if data is not entered correctly
- Phone number input has custom validation which only allows numbers and a subset of symbols ('-', '+', '(', ')') to be entered into the input box – typing any invalid characters does not enter any data into the input box
- Deposit amount, loan amount, and annual salary all include custom validation which only allows numbers to be entered into the input box – typing any invalid characters does not enter any data into the input box
- Tests have been recorded and are included in the rest of this section

Form shown in natural state:


Loans 4 U

 Surname


Surname

 Email


Email Address


 Tel:

Phone Number


 Deposit

Deposit Amount


 Loan Length

 Salary

Annual Salary

 Loan Amount

Loan Amount

 Do you have a bank account?

Submit Form

Form shown without valid data entered (user has clicked through the text areas without entering data). User is unable to submit the form without all valid data entered:

Loans 4 U

Surname

Surname

This field is required.

Email

Email Address

Please enter a valid email.

Tel:

Phone Number

Please enter a valid 10-digit phone number.

£ Deposit

Deposit Amount

This field is required.

Loan Length

This field is required.

£ Salary

Annual Salary

This field is required.

£ Loan Amount

Loan Amount

This field is required.

Do you have a bank account?

This field is required.

Submit Form

User must enter valid data into every input before submit button is available:

Loans 4 U

Surname

Keen

Email

elliott.keen@gmail.com

Tel:

07724568525

£ Deposit

0

Loan Length

20 Years

£ Salary

40000

£ Loan Amount

100000

Do you have a bank account?

This field is required.

Submit Form

The form validation happens both within the app.component.html and the app.component.ts files . In the app.component.ts file, Angular Validators are utilised to verify the validity of the data entered:

```
constructor(private fb: FormBuilder) {  
  // Has basic pattern matching to check when number is required if number is given  
  // Also has validator to check if valid email address given  
  this.rForm = fb.group({  
    'surname' : [null, Validators.required],  
    'email' : [null, Validators.compose([ Validators.required, Validators.email ])],  
    'phone_number' : [null, Validators.compose([ Validators.required, Validators.pattern(/^[0-9]*/) ])],  
    'sizeOfDeposit' : [null, Validators.compose([ Validators.required, Validators.pattern(/^[0-9]*/) ])],  
    'loanLength' : [null, Validators.compose([ Validators.required, Validators.pattern(/^[0-9]*/) ])],  
    'annualSalary' : [null, Validators.compose([ Validators.required, Validators.pattern(/^[0-9]*/) ])],  
    'loanAmount' : [null, Validators.compose([ Validators.required, Validators.pattern(/^[0-9]*/) ])],  
    'isUser' : [null, Validators.required]  
  })  
}
```

Within the app.component.html, an alert located within the app.component.ts is called when invalid data is enter:

```
<div class="alert" *ngIf="!rForm.controls['sizeOfDeposit'].valid && rForm.controls  
  ['sizeOfDeposit'].touched">{{ titleAlert }}</div>
```

The alerts in the app.component.ts:

```
titleAlert:string = 'This field is required.';  
emailAlert:string = 'Please enter a valid email.';  
phoneAlert:string = 'Please enter a valid 10-digit phone number.'
```

Tests:

Scenario	Expected Result	Result
Surname box is clicked but no data is entered.	Alert shows stating that field is required.	Success
Email box is clicked but no data is entered.	Alert shows stating that valid email is required.	Success
Phone Number box is clicked but no data is entered.	Alert shows stating that valid 10-digit phone number is required.	Success
Deposit Amount box is clicked but no data is entered.	Alert shows stating that field is required.	Success
Loan Length selection box is clicked but no data is chosen.	Alert shows stating that field is required.	Success
Salary box is clicked but no data is entered.	Alert shows stating that field is required.	Success

Loan Amount box is clicked but no data is entered.	Alert shows stating that field is required.	Success
Do you have a bank account is clicked but no data is chosen	Alert shows stating that field is required.	Success
Text is entered into the email box but it is not a valid email	Alert shows stating that valid email is required.	Success
Valid email address is entered into the email box.	Alert does not show.	Success
User tried to enter text into phone number box	User is unable to enter text into phone number box, only numbers or '-' or '+' or '(' or ')' are allowed. Alert does not show.	Success
User enters valid phone number into phone number box.	Alert does not show. User can enter numbers freely.	Success
User tried to enter text into deposit amount box	User is unable to enter text into Deposit Box, only numbers are allowed. Alert does not show.	Success
User enters valid numbers into deposit amount box.	Alert does not show. User can enter numbers freely.	Success

Test Summary:

All validation happens correctly. The user is unable to enter characters within the deposit amount, annual salary, loan amount, and phone number boxes (excluding '-', '+', '(', ') which are allowed in the phone number box). Angular Validators are used to determine if the email address is a valid email address – that is, if it contains characters separated by an '@' symbol and a '.' and is allowed to contain letters and numbers.

40-49%

If and only if the data is correct, then the possible mortgage offers are displayed. these should be displayed at the bottom of the form. So that the user can (for example) modify their deposit value and see the effect on the mortgage offers instantly. At this level, the software need only state the allowed options.

Loans 4 U

SurnameKeen

Emailelliot.keen@gmail.cor

Tel:07724568515

£ Deposit0

Loan Length20 Years

£ Salary40000

£ Loan Amount100000

Do you have a bank account?Yes

Submit Form

Option	Interest Rate	Mortgage Length	Amount Borrowed	Amount Repayable	Monthly Replayment
B	3.7%	20	£100,000.00	£103,700.00	£5,185.00
A	3.8%	20	£100,000.00	£103,800.00	£5,190.00

Lowest monthly repayments are highlighted in Red.

Refresh Page

Targets Met:

- Offers are displayed on the same page
- Offers can be updated in real time
- Software states all allowed options
- When no options are available, user is alerted to that fact

Tests

Scenario	Expected Result	Result
<ul style="list-style-type: none">• 20 year mortgage• no deposit• salary of £40000• holds an account with the building society• loan amount £100000	Options A and B show Options C, D and E are not shown	Success
<ul style="list-style-type: none">• 10 year mortgage• no deposit• salary of £40000• holds an account with the building society• loan amount £100000	Options A and B show Options C, D and E are not shown	Success

<ul style="list-style-type: none"> • 30 year mortgage • no deposit • salary of £40000 • holds an account with the building society • loan amount £100000 	<p>No options show</p> <p>Error message is shown</p>	Success
<ul style="list-style-type: none"> • 20 year mortgage • deposit of £10000 • salary of £40000 • holds an account with the building society • loan amount £100000 	<p>Option A, Option B and Option C show</p> <p>Options D and E are not shown</p>	Success
<ul style="list-style-type: none"> • 30 year mortgage • no deposit • salary of £40000 • holds an account with the building society • loan amount £100000 <p>Data is changed after result given to</p> <ul style="list-style-type: none"> • 20 year mortgage • deposit of £10000 • salary of £40000 	<p>First, no options are shown.</p> <p>Once data is updated, Option A, B and C are shown</p> <p>Once data is updated, Options D and E are not shown</p>	Success

An Example of the error message displayed when no option is available:

Loans 4 U

Surname

Keen

Email

elliott.keen@gmail.com

Tel:

07724568525

£ Deposit

0

Loan Length

30 Years

£ Salary

40000

£ Loan Amount

100000

Do you have a bank account?

Yes

Submit Form

Option	Interest Rate	Mortgage Length	Amount Borrowed	Amount Repayable	Monthly Repayment
No Option available					
Lowest monthly repayments are highlighted in Red.					
Refresh Page					

An example of Option A, B and C being shown:

Loans 4 U

Surname

Keen

Email

elliott.keen@gmail.com

Tel:

07724568525

£ Deposit

10000

Loan Length

20 Years

£ Salary

40000

£ Loan Amount

100000

Do you have a bank account?

Yes

Submit Form

Option	Interest Rate	Mortgage Length	Amount Borrowed	Amount Repayable	Monthly Replayment
C	3.6%	20	£100,000.00	£103,600.00	£5,180.00
B	3.7%	20	£100,000.00	£103,700.00	£5,185.00
A	3.8%	20	£100,000.00	£103,800.00	£5,190.00

Lowest monthly repayments are highlighted in Red.

Refresh Page

50-59%

1. At this level Option A and Option B needs to be implemented correctly. Tests should be performed and documented in test-harness.pdf
2. The allowed options should be displayed in an intuitive HTML table style, for example with the data in section 0.1.2.1 then the user should see some- thing similar to fig. 1.

Targets Met:

- Options are displayed in an intuitive html table
- Options A and B are fully implemented and tests are shown in previous table

Loans 4 U

Surname

Keen

Email

elliott.keen@gmail.com

Tel:

07724568515

£ Deposit

0

Loan Length

10 Years

£ Salary

40000

£ Loan Amount

100000

Do you have a bank account?

Yes

Submit Form

Option	Interest Rate	Mortgage Length	Amount Borrowed	Amount Repayable	Monthly Replayment
B	3.7%	10	£100,000.00	£103,700.00	£10,370.00
A	3.8%	10	£100,000.00	£103,800.00	£10,380.00

Lowest monthly repayments are highlighted in Red.

Refresh Page

60-69%









1. All options A, B, C, D, and E need to be implemented correctly. Tests should be performed and documented in test-harness.pdf. 2. The allowed options should be displayed in an intuitive HTML table style, for example with the data in section 0.1.2.1 then the user should see something similar to fig. 1.
2. The form is dynamic in the following manner: if the software detects an error in a field then it will not allow data entry into the form elements after it until the issue in the field is addressed.
3. If the data is correct, then the allowed options are displayed and ordered in such a way that the option with the smallest monthly repayment is displayed first in the table and is emphasised in some manner.

Targets Met:

- All options A, B, C, D and E are implemented correctly
- Tests have been performed showing the proper implementation of options A, B, C, D, and E
- When correct data is entered, allowed options are displayed and ordered in such a way as to emphasise the option with the smallest monthly repayment (which is coloured in red and displayed first within the table). Remaining options are ordered from lowest to highest by monthly repayments

Example of A, B, D, and E displaying correctly and C not showing:

Loans 4 U

 Surname	Keen
 Email	elliott.keen@gmail.com
 Tel:	07724568515
 Deposit	50000
 Loan Length	10 Years ▼
 Salary	50000
 Loan Amount	100000
 Do you have a bank account?	Yes ▼

Submit Form

Option	Interest Rate	Mortgage Length	Amount Borrowed	Amount Repayable	Monthly Replayment
E	3.2%	10	£100,000.00	£103,200.00	£10,320.00
D	3.4%	10	£100,000.00	£103,400.00	£10,340.00
B	3.7%	10	£100,000.00	£103,700.00	£10,370.00
A	3.8%	10	£100,000.00	£103,800.00	£10,380.00

Lowest monthly repayments are highlighted in Red.

Refresh Page

Example of A and C displaying correctly and B, D, and E not showing:

Loans 4 U

Surname	Keen
Email	elliott.keen@gmail.com
Tel:	07724568515
Deposit	50000
Loan Length	20 Years ▼
Salary	50000
Loan Amount	100000
Do you have a bank account?	No ▼

Submit Form

Option	Interest Rate	Mortgage Length	Amount Borrowed	Amount Repayable	Monthly Repayment
C	3.6%	20	£100,000.00	£103,600.00	£5,180.00
A	3.8%	20	£100,000.00	£103,800.00	£5,190.00

Lowest monthly repayments are highlighted in Red.

Refresh Page

Tests

Scenario	Expected Result	Result
<ul style="list-style-type: none"> 20 year mortgage £50000 deposit salary of £50000 does not have building society account loan amount £100000 	Options C and A show Options B, D and E are not shown Smallest monthly repayment is highlighted in red and displayed first	Success
<ul style="list-style-type: none"> 20 year mortgage £50000 deposit salary of £50000 has a building society account loan amount £100000 	Options A, B, C and E show Option D is not shown	Success
<ul style="list-style-type: none"> 30 year mortgage £50000 deposit salary of £50000 has a building society account loan amount £100000 	Option D shows Options A, B, D and E are now shown	Success
<ul style="list-style-type: none"> 10 year mortgage £50000 deposit salary of £50000 	Options A, B, D and E show Option C is not shown	Success

<ul style="list-style-type: none"> has a building society account loan amount £100000 		
		Success

Further tests displaying correct data for every option:

Option A is shown; Options B, C, D and E are not show:

Loans 4 U

Surname

Keen

Email

elliott.keen@gmail.com

Tel:

07724568515

£ Deposit

0

Loan Length

10 Years

£ Salary

50000

£ Loan Amount

100000

Do you have a bank account?

No

Submit Form

Option	Interest Rate	Mortgage Length	Amount Borrowed	Amount Repayable	Monthly Replayment
A	3.8%	10	£100,000.00	£103,800.00	£10,380.00

Lowest monthly repayments are highlighted in Red.

Refresh Page

Options A and B are displaye; Options D, C and E are not shown:

Loans 4 U

Surname

Keen

Email

elliott.keen@gmail.com

Tel:

07724568515

£ Deposit

0

Loan Length

10 Years

£ Salary

50000

£ Loan Amount

100000

Do you have a bank account?

Yes

Submit Form

Option	Interest Rate	Mortgage Length	Amount Borrowed	Amount Repayable	Monthly Replayment
B	3.7%	10	£100,000.00	£103,700.00	£10,370.00
A	3.8%	10	£100,000.00	£103,800.00	£10,380.00

Lowest monthly repayments are highlighted in Red.

Refresh Page

Options A and D are shown; Options B, C and E are not shown:

Loans 4 U

Surname

Keen

Email

elliott.keen@gmail.com

Tel:

07724568515

Deposit

20000

Loan Length

10 Years

Salary

50000

Loan Amount

100000

Do you have a bank account?

No

Submit Form

Option	Interest Rate	Mortgage Length	Amount Borrowed	Amount Repayable	Monthly Replayment
D	3.4%	10	£100,000.00	£103,400.00	£10,340.00
A	3.8%	10	£100,000.00	£103,800.00	£10,380.00

Lowest monthly repayments are highlighted in Red.

Refresh Page

Options A, B and D are show; Options C and E are not shown:

Loans 4 U

Surname

Keen

Email

elliott.keen@gmail.com

Tel:

07724568515

Deposit

20000

Loan Length

10 Years

Salary

50000

Loan Amount

100000

Do you have a bank account?

Yes

Submit Form









Option	Interest Rate	Mortgage Length	Amount Borrowed	Amount Repayable	Monthly Replayment
D	3.4%	10	£100,000.00	£103,400.00	£10,340.00
B	3.7%	10	£100,000.00	£103,700.00	£10,370.00
A	3.8%	10	£100,000.00	£103,800.00	£10,380.00

Lowest monthly repayments are highlighted in Red.

Refresh Page

Options A, B and C are shown; Options D and E are not shown:

Loans 4 U

 Surname	Keen
 Email	elliott.keen@gmail.com
 Tel:	07724568515
 Deposit	20000
 Loan Length	20 Years ▾
 Salary	50000
 Loan Amount	100000
 Do you have a bank account?	Yes ▾

Submit Form









Option	Interest Rate	Mortgage Length	Amount Borrowed	Amount Repayable	Monthly Repayment
C	3.6%	20	£100,000.00	£103,600.00	£5,180.00
B	3.7%	20	£100,000.00	£103,700.00	£5,185.00
A	3.8%	20	£100,000.00	£103,800.00	£5,190.00

Lowest monthly repayments are highlighted in Red.

Refresh Page

Option D is shown; Options A, B, C and E are not shown:

Loans 4 U

 Surname	Keen
 Email	elliott.keen@gmail.com
 Tel:	07724568515
 Deposit	20000
 Loan Length	30 Years ▾
 Salary	50000
 Loan Amount	100000
 Do you have a bank account?	Yes ▾

Submit Form


Option	Interest Rate	Mortgage Length	Amount Borrowed	Amount Repayable	Monthly Repayment
D	3.4%	30	£100,000.00	£103,400.00	£3,446.67

Lowest monthly repayments are highlighted in Red.


Refresh Page

Options A and C are shown; Options B, D and E are not shown:


Loans 4 U

 Surname


Keen

 Email


elliott.keen@gmail.com

 Tel:


07724568515

 Deposit


20000

 Loan Length


20 Years ▾

 Salary

50000

 Loan Amount

100000

 Do you have a bank account?

No ▾

Submit Form


Option	Interest Rate	Mortgage Length	Amount Borrowed	Amount Repayable	Monthly Repayment
C	3.6%	20	£100,000.00	£103,600.00	£5,180.00
A	3.8%	20	£100,000.00	£103,800.00	£5,190.00

Lowest monthly repayments are highlighted in Red.


Refresh Page

Options A, B, C and E are shown; Option D is not show:


Loans 4 U

 Surname


Keen

 Email


elliott.keen@gmail.com

 Tel:


07724568515

 Deposit


40000

 Loan Length


20 Years ▾

 Salary

50000

 Loan Amount

100000

 Do you have a bank account?

Yes ▾

Submit Form

Option	Interest Rate	Mortgage Length	Amount Borrowed	Amount Repayable	Monthly Repayment
E	3.2%	20	£100,000.00	£103,200.00	£5,160.00
C	3.6%	20	£100,000.00	£103,600.00	£5,180.00
B	3.7%	20	£100,000.00	£103,700.00	£5,185.00
A	3.8%	20	£100,000.00	£103,800.00	£5,190.00

Lowest monthly repayments are highlighted in Red.

Refresh Page