CodeCraft - RV22 J1 (/courses/2266) / Missions (/courses/2266/assessments?category=2826) / Mission 2 - Number Converter (/courses/2266/assessments/51420) / Attempt

Tan Zi Xuan (/courses/2266/users/65880) ≡

Level 8 6550 EXP (/courses/2266/users/65880)

1550 EXP to Next Level

(/courses/2266/achievements/13823) (/courses/2266/achievements/13822) (/courses/2266/achievements/13821) + 4 More (/courses/2266/achievements)

Mission 2 - Number Converter

All numbers other than denary number should be represented using strings.

Question 1: bin_to_den - for loop

View Past Answers

No past answers.

Define function `bin_to_den` to convert a binary number (string type) to denary number (integer type).

Implement using for loop.

template.py

```


```

Test Cases

Public Test Cases

Expression	Expected	Passed
`bin_to_den("101")`	5	
`bin_to_den("1111")`	15	
`bin_to_den("11111110")`	254	

RESET ANSWER   RUN CODE

Comments

Enter your comment here

COMMENT

Question 2: bin_to_den - while loop

View Past Answers

No past answers.

Define function `bin_to_den` to convert a binary number (string type) to denary number (integer type).

Implement using while loop.

template.py

```

```

Test Cases

Public Test Cases

Expression	Expected	Passed
`bin_to_den("101")`	`5`	
`bin_to_den("1111")`	`15`	
`bin_to_den("11111110")`	`254`	

RESET ANSWER RUN CODE

Comments

Enter your comment here

COMMENT

Question 3: bin_to_den - recursion

View Past Answers

No past answers.

Define function `bin_to_den` to convert a binary number (string type) to denary number (integer type).

Implement using recursion.

template.py

```

```

Test Cases

Public Test Cases

Expression	Expected	Passed
`bin_to_den("101")`	5	
`bin_to_den("1111")`	15	
`bin_to_den("11111110")`	254	

RESET ANSWER   RUN CODE

Comments

Enter your comment here

COMMENT

Question 4: den_to_bin - while loop

View Past Answers

No past answers.

Define function `den_to_bin` to convert a denary number (integer type) to binary number (string type).

Implement using while loop.

template.py

```

```

Test Cases

Public Test Cases

Expression	Expected	Passed
`den_to_bin(5)`	`"101"`	
`den_to_bin(15)`	`"1111"`	

Expression	Expected	Passed
`den_to_bin(254)`	`"11111110"`	

RESET ANSWER   RUN CODE

Comments

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COMMENT

Question 5: den_to_bin - recursion

View Past Answers

No past answers.

Define function `den_to_bin` to convert a denary number (integer type) to binary number (string type).

Implement using recursion.

template.py

```

```

Test Cases

Public Test Cases

Expression	Expected	Passed
`den_to_bin(5)`	`"101"`	
`den_to_bin(15)`	`"1111"`	
`den_to_bin(254)`	`"11111110"`	

RESET ANSWER RUN CODE

Comments

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COMMENT

Question 6: value_to_symbol and symbol_to_value

Given

`valid_digits = "0123456789ABCDEFGHIJKLMNOPQRSTUVWXYZ"`

View Past Answers

No past answers.

Define function `value_to_symbol` to convert a denary value to its corresponding symbol:

For example, `7` to `"7"` , `15` to `"F"` , `26` to `"Q"` .

Define another function `symbol_to_value` to convert a symbol to its corresponding denary value:

For example, `"7"` to `7` , `"F"` to `15` , `"Q"` to `26` .

template.py

```
valid_digits = "0123456789ABCDEFGHIJKLMNOPQRSTUVWXYZ"

```

Test Cases

Public Test Cases

Expression	Expected	Passed
`value_to_symbol(7)`	`"7"`	
`value_to_symbol(15)`	`"F"`	
`value_to_symbol(26)`	`"Q"`	
`symbol_to_value("7")`	`7`	
`symbol_to_value("F")`	`15`	
`symbol_to_value("Q")`	`26`	

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Comments

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Question 7: any_to_den(any_num, base)

Define **recursive** function `any_to_den(any_num, base)` , which convert `any_num` in base `base` to its denary value.

View Past Answers

No past answers.

template.py

Test Cases

Public Test Cases

Expression	Expected	Passed
`any_to_den("FE", 16)`	`254`	
`any_to_den("57", 8)`	`47`	
`any_to_den("FE", 25)`	`389`	

RESET ANSWER RUN CODE

Comments

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COMMENT

Question 8: den_to_any(den_num, base)

Define **recursive** function `den_to_any(den_num, base)` , which convert `den_num` to a number in base `base` .

View Past Answers

No past answers.

template.py

```


```

Test Cases

Public Test Cases

Expression	Expected	Passed
`den_to_any(254, 16)`	`"FE"`	
`den_to_any(47, 8)`	`"57"`	

Expression	Expected	Passed
`den_to_any(389, 25)`	`"FE"`	

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Comments

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COMMENT

Question 9: bin_to_hex

View Past Answers

No past answers.

Define function `bin_to_hex` which takes in a binary number and returns a hex number.

template.py

```


```

Test Cases

Public Test Cases

Expression	Expected	Passed
`bin_to_hex("11111100")`	`"FC"`	
`bin_to_hex("111111100")`	`"1FC"`	
`bin_to_hex("1111100")`	`"7C"`	

RESET ANSWER RUN CODE

Comments

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COMMENT

Question 10: hex_to_bin

Define function `hex_to_bin` which takes in a hex number and returns a binary number.

View Past Answers

No past answers.

template.py

```

```

Test Cases

Public Test Cases

Expression	Expected	Passed
`hex_to_bin("FC")`	`"11111100"`	
`hex_to_bin("1FC")`	`"111111100"`	
`hex_to_bin("7C")`	`"1111100"`	

RESET ANSWER RUN CODE

Comments

Enter your comment here

COMMENT

Question 11: Number Converter - The Final Task!

Congratulations Heroes of CodeCraft!

View Past Answers

No past answers.

Now you have mastered the number conversion techniques, which is an essential skill for planets who have adopted different numeral systems to trade and communicate with each other. (Some aliens have only 2 fingers! While some others have up to 36 fingers!!)

We would like you to leverage on your expertise to create a tool to help the all mighty Universe Council. The magical number converter should be able to convert numbers between various numeral systems.

Your programme should provide the following functionalities:

1. A user interface/menu providing necessary options and meaningful user feedback. Data validation processes should be put in place to ensure user always key in valid menu choices or valid numbers in the respective number systems.

2. The program should be able to convert **positive** integers between numeral systems:
a) Convert denary number to binary number and versa.
b) Convert between binary, octal and hexadecimal numbers.
c) Convert between any numeral systems.

The Universe Council will reward you based on the following criteria:
1. Accuracy of the system.
2. Data validation with meaningful feedback prompt messages.
3. User friendly interface.

You may get bonus reward if your number system can cater to numbers with decimal points.

Binary Fractions and Fractional Binary Numbers (electronics-tutorials.ws) (https://www.electronics-tutorials.ws/binary/binary-fractions.html)

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