



De La Salle University - Manila

In Partial Fulfillment of the Course
Introduction to Computer Organization and
Architecture 2 (CSARCH2)

IEEE-754 Decimal-32 Floating-Point Converter

Test Cases

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I. Finite Positive Test Cases

Test Case 1 - With Decimal Point (No Rounding)

Input	Process	Output
Decimal <input type="text" value="1234.5"/>	Normalized Decimal: <input type="text" value="0012345"/>	Sign Bit: <input type="text" value="0"/>
Exponent (Base-10) <input type="text" value="10"/>	Final Exponent: <input type="text" value="9"/>	Combination Bits: <input type="text" value="01000"/>
Rounding Method <div>Truncate</div>	E-Prime: <input type="text" value="110 → 01101110"/>	Exponent Bits: <input type="text" value="101110"/>
		Densely Packed BCD: <input type="text" value="00000100100111000101"/>
<div>Compute</div>		Final Answer (Binary): <input type="text" value="0 01000 101110 0000 0100 1001 1100 0101"/>
<div>Export</div>		Final Answer (Hex): <input type="text" value="0X22E049C5"/>

Test Case 2 - With Decimal Point (Truncate)

Input	Process	Output
Decimal <input type="text" value="123456.789"/>	Normalized Decimal: <input type="text" value="1234567"/>	Sign Bit: <input type="text" value="0"/>
Exponent (Base-10) <input type="text" value="10"/>	Final Exponent: <input type="text" value="9"/>	Combination Bits: <input type="text" value="01001"/>
Rounding Method <div>Truncate</div>	E-Prime: <input type="text" value="110 → 01101110"/>	Exponent Bits: <input type="text" value="101110"/>
		Densely Packed BCD: <input type="text" value="01001101001011100111"/>
<div>Compute</div>		Final Answer (Binary): <input type="text" value="0 01001 101110 0100 1101 0010 1110 0111"/>
<div>Export</div>		Final Answer (Hex): <input type="text" value="0X26E4D2E7"/>

Test Case 3 - With Decimal Point (Round Up)

Input	Process	Output
Decimal <input type="text" value="123456.789"/>	Normalized Decimal: <input type="text" value="1234568"/>	Sign Bit: <input type="text" value="0"/>
Exponent (Base-10) <input type="text" value="91"/>	Final Exponent: <input type="text" value="90"/>	Combination Bits: <input type="text" value="10001"/>
Rounding Method <div>Round up</div>	E-Prime: <input type="text" value="191 → 10111111"/>	Exponent Bits: <input type="text" value="111111"/>
		Densely Packed BCD: <input type="text" value="01001101001011101000"/>
<div>Compute</div>		Final Answer (Binary): <input type="text" value="0 10001 111111 0100 1101 0010 1110 1000"/>
<div>Export</div>		Final Answer (Hex): <input type="text" value="0X47F4D2E8"/>

Test Case 4 - With Decimal Point (Round Down)

Input

Decimal

123456.789

Exponent (Base-10)

-100

Rounding Method

Round down

Compute

Export

Process

Normalized Decimal:

1234567

Final Exponent:

-101

E-Prime:

0 → 00000000

Output

Sign Bit:

0

Combination Bits:

00001

Exponent Bits:

000000

Densely Packed BCD:

01001101001011100111

Final Answer (Binary):

00000100000010011010010111010111

Final Answer (Hex):

0X404D2E7

Test Case 5 - With Decimal Point (Round to Nearest Ties to Even)

Input

Decimal

123456.789

Exponent (Base-10)

0

Rounding Method

Round to nearest ties to even

Compute

Export

Process

Normalized Decimal:

1234568

Final Exponent:

-1

E-Prime:

100 → 01100100

Output

Sign Bit:

0

Combination Bits:

01001

Exponent Bits:

100100

Densely Packed BCD:

01001101001011101000

Final Answer (Binary):

0010011001001001101001001101000

Final Answer (Hex):

0X2644D2E8

Test Case 6 - Without Decimal Point (No Rounding)

Input

Decimal

12345

Exponent (Base-10)

10

Rounding Method

Round to nearest ties to even

Compute

Export

Process

Normalized Decimal:

0012345

Final Exponent:

10

E-Prime:

111 → 01101111

Output

Sign Bit:

0

Combination Bits:

01000

Exponent Bits:

101111

Densely Packed BCD:

00000100100111000101

Final Answer (Binary):

0010001011110000100110010101

Final Answer (Hex):

0X22F049C5

Test Case 7 - Without Decimal Point (Truncate)

Input

Decimal

12345675

Exponent (Base-10)

10

Rounding Method

Truncate

Compute

Export

Process

Normalized Decimal:

1234567

Final Exponent:

11

E-Prime:

112 → 01110000

Output

Sign Bit:

0

Combination Bits:

01001

Exponent Bits:

110000

Densely Packed BCD:

01001101001011100111

Final Answer (Binary):

00100111000001001101001011100111

Final Answer (Hex):

0X2704D2E7

Test Case 8 - Without Decimal Point (Round Up)

Input

Decimal

12345675

Exponent (Base-10)

89

Rounding Method

Round up

Compute

Export

Process

Normalized Decimal:

1234568

Final Exponent:

90

E-Prime:

191 → 10111111

Output

Sign Bit:

0

Combination Bits:

10001

Exponent Bits:

111111

Densely Packed BCD:

01001101001011101000

Final Answer (Binary):

01000111111101001101001011101000

Final Answer (Hex):

0X47F4D2E8

Test Case 9 - Without Decimal Point (Round Down)

Input

Decimal

12345675

Exponent (Base-10)

-102

Rounding Method

Round down

Compute

Export

Process

Normalized Decimal:

1234567

Final Exponent:

-101

E-Prime:

0 → 00000000

Output

Sign Bit:

0

Combination Bits:

00001

Exponent Bits:

000000

Densely Packed BCD:

01001101001011100111

Final Answer (Binary):

00000100000001001101001011100111

Final Answer (Hex):

0X404D2E7

Test Case 10 - Without Decimal Point (Round to Nearest Ties to Even)

Input

Decimal

12345675

Exponent (Base-10)

0

Rounding Method

Round to nearest ties to even

Compute

Export

Process

Normalized Decimal:

1234567

Final Exponent:

1

E-Prime:

102 → 01100110

Output

Sign Bit:

0

Combination Bits:

01001

Exponent Bits:

100110

Densely Packed BCD:

01001101001011100111

Final Answer (Binary):

001001100110010010111

Final Answer (Hex):

0X2664D2E7

II. Finite Negative Test Cases

Test Case 11 - With Decimal Point (7 Digits No Rounding)

Input

Decimal

-1234.567

Exponent (Base-10)

10

Rounding Method

Round to nearest ties to even

Compute

Export

Process

Normalized Decimal:

-1234567

Final Exponent:

7

E-Prime:

108 → 01101100

Output

Sign Bit:

1

Combination Bits:

01001

Exponent Bits:

101100

Densely Packed BCD:

01001101001011100111

Final Answer (Binary):

101001101100010010111

Final Answer (Hex):

0XA6C4D2E7

Test Case 12 - With Decimal Point (6 Digits No Rounding)

Input

Decimal

-1234.56

Exponent (Base-10)

10

Rounding Method

Round to nearest ties to even

Compute

Export

Process

Normalized Decimal:

-0123456

Final Exponent:

8

E-Prime:

109 → 01101101

Output

Sign Bit:

1

Combination Bits:

01000

Exponent Bits:

101101

Densely Packed BCD:

00101000111001010110

Final Answer (Binary):

1010001011010010001101010

Final Answer (Hex):

0XA2D28E56

Test Case 13 - With Decimal Point (Truncate)

Input

Decimal

-123456.789

Exponent (Base-10)

10

Rounding Method

Truncate

Compute

Export

Process

Normalized Decimal:

-1234567

Final Exponent:

9

E-Prime:

110 → 01101110

Output

Sign Bit:

1

Combination Bits:

01001

Exponent Bits:

101110

Densely Packed BCD:

01001101001011100111

Final Answer (Binary):

101001101110010011011100111

Final Answer (Hex):

0XA6E4D2E7

Test Case 14 - With Decimal Point (Round Up)

Input

Decimal

-123456.789

Exponent (Base-10)

91

Rounding Method

Round up

Compute

Export

Process

Normalized Decimal:

-1234567

Final Exponent:

90

E-Prime:

191 → 10111111

Output

Sign Bit:

1

Combination Bits:

10001

Exponent Bits:

111111

Densely Packed BCD:

01001101001011100111

Final Answer (Binary):

11000111111101001101001011100111

Final Answer (Hex):

0XC7F4D2E7

Test Case 15 - With Decimal Point (Round Down)

Input

Decimal

-123456.789

Exponent (Base-10)

-100

Rounding Method

Round down

Compute

Export

Process

Normalized Decimal:

-1234568

Final Exponent:

-101

E-Prime:

0 → 00000000

Output

Sign Bit:

1

Combination Bits:

00001

Exponent Bits:

000000

Densely Packed BCD:

01001101001011101000

Final Answer (Binary):

1000010000000100110100101000

Final Answer (Hex):

0X8404D2E8

Test Case 16 - With Decimal Point (Round to Nearest Ties to Even)

Input

Decimal

-123456.789

Exponent (Base-10)

0

Rounding Method

Round to nearest ties to even

Compute

Export

Process

Normalized Decimal:

-1234568

Final Exponent:

-1

E-Prime:

100 → 01100100

Output

Sign Bit:

1

Combination Bits:

01001

Exponent Bits:

100100

Densely Packed BCD:

01001101001011101000

Final Answer (Binary):

101001100100100001101000

Final Answer (Hex):

0XA644D2E8

Test Case 17 - Without Decimal Point (No Rounding)

Input

Decimal

-1234567

Exponent (Base-10)

10

Rounding Method

Round to nearest ties to even

Compute

Export

Process

Normalized Decimal:

-1234567

Final Exponent:

10

E-Prime:

111 → 01101111

Output

Sign Bit:

1

Combination Bits:

01001

Exponent Bits:

101111

Densely Packed BCD:

01001101001011100111

Final Answer (Binary):

10100110111101001101100111

Final Answer (Hex):

0XA6F4D2E7

Test Case 18 - Without Decimal Point (Truncate)

Input

Decimal

-12345665

Exponent (Base-10)

10

Rounding Method

Truncate

Compute

Export

Process

Normalized Decimal:

-1234566

Final Exponent:

11

E-Prime:

112 → 01110000

Output

Sign Bit:

1

Combination Bits:

01001

Exponent Bits:

110000

Densely Packed BCD:

01001101001011100110

Final Answer (Binary):

101001110000010011010010110

Final Answer (Hex):

0XA704D2E6

Test Case 19 - Without Decimal Point (Round-Up)

Input	Process	Output
Decimal <div>-12345665</div>	Normalized Decimal: <div>-1234566</div>	Sign Bit: <div>1</div>
Exponent (Base-10) <div>89</div>	Final Exponent: <div>90</div>	Combination Bits: <div>10001</div>
Rounding Method <div>Round up</div>	E-Prime: <div>191 → 10111111</div>	Exponent Bits: <div>111111</div>
<div>Compute</div>		Densely Packed BCD: <div>01001101001011100110</div>
<div>Export</div>		Final Answer (Binary): <div>1 10001 111111 0100 1101 0010 1110 0110</div>
		Final Answer (Hex): <div>0XC7F4D2E6</div>

Test Case 20 - Without Decimal Point (Round Down)

Input	Process	Output
Decimal <div>-12345665</div>	Normalized Decimal: <div>-1234567</div>	Sign Bit: <div>1</div>
Exponent (Base-10) <div>-102</div>	Final Exponent: <div>-101</div>	Combination Bits: <div>00001</div>
Rounding Method <div>Round down</div>	E-Prime: <div>0 → 00000000</div>	Exponent Bits: <div>000000</div>
<div>Compute</div>		Densely Packed BCD: <div>01001101001011100111</div>
<div>Export</div>		Final Answer (Binary): <div>1 00001 000000 0100 1101 0010 1110 0111</div>
		Final Answer (Hex): <div>0X8404D2E7</div>

Test Case 21 - Without Decimal Point (Round to Nearest Ties to Even)

Input	Process	Output
Decimal <div>-12345665</div>	Normalized Decimal: <div>-1234566</div>	Sign Bit: <div>1</div>
Exponent (Base-10) <div>0</div>	Final Exponent: <div>1</div>	Combination Bits: <div>01001</div>
Rounding Method <div>Round to nearest ties to even</div>	E-Prime: <div>102 → 01100110</div>	Exponent Bits: <div>100110</div>
<div>Compute</div>		Densely Packed BCD: <div>01001101001011100110</div>
<div>Export</div>		Final Answer (Binary): <div>1 01001 100110 0100 1101 0010 1110 0110</div>
		Final Answer (Hex): <div>0XA664D2E6</div>

III. Infinity Positive Test Cases

Test Case 22 - With Decimal Point (No Rounding)

Input

Decimal

1234.5

Exponent (Base-10)

100

Rounding Method

Round to nearest ties to even

Compute

Export

Process

Normalized Decimal:

0012345

Final Exponent:

99 (Infinity)

E-Prime:

Infinity → 11111111

Output

Sign Bit:

0

Combination Bits:

11110

Exponent Bits:

111111

Densely Packed BCD:

00000000000000000000

Final Answer (Binary):

011110111111000000000000000000

Final Answer (Hex):

0X7BF0000

Test Case 23 - With Decimal Point (Truncate)

Input

Decimal

123456.789

Exponent (Base-10)

92

Rounding Method

Truncate

Compute

Export

Process

Normalized Decimal:

1234567

Final Exponent:

91 (Infinity)

E-Prime:

Infinity → 11111111

Output

Sign Bit:

0

Combination Bits:

11110

Exponent Bits:

111111

Densely Packed BCD:

00000000000000000000

Final Answer (Binary):

011110111111000000000000000000

Final Answer (Hex):

0X7BF0000

Test Case 24 - With Decimal Point (Round-Up)

Input

Decimal

123456.789

Exponent (Base-10)

-101

Rounding Method

Round up

Compute

Export

Process

Normalized Decimal:

1234568

Final Exponent:

-102 (Denormalized)

E-Prime:

101 → 01100101

Output

Sign Bit:

0

Combination Bits:

01000

Exponent Bits:

100101

Densely Packed BCD:

00000000000000000000

Final Answer (Binary):

001000100101000000000000000000

Final Answer (Hex):

0X2250000

Test Case 25 - With Decimal Point (Round Down)

Input

Decimal

123456.789

Exponent (Base-10)

-101

Rounding Method

Round down

Compute

Export

Process

Normalized Decimal:

1234567

Final Exponent:

-102 (Denormalized)

E-Prime:

101 → 01100101

Output

Sign Bit:

0

Combination Bits:

01000

Exponent Bits:

100101

Densely Packed BCD:

00000000000000000000

Final Answer (Binary):

0010001001010000000000000000

Final Answer (Hex):

0X22500000

Test Case 26 - With Decimal Point (Round to Nearest Ties to Even)

Input

Decimal

123456.789

Exponent (Base-10)

-102

Rounding Method

Round to nearest ties to even

Compute

Export

Process

Normalized Decimal:

1234568

Final Exponent:

-103 (Denormalized)

E-Prime:

101 → 01100101

Output

Sign Bit:

0

Combination Bits:

01000

Exponent Bits:

100101

Densely Packed BCD:

00000000000000000000

Final Answer (Binary):

0010001001010000000000000000

Final Answer (Hex):

0X22500000

Test Case 27 - Without Decimal Point (No Rounding)

Input

Decimal

12345

Exponent (Base-10)

91

Rounding Method

Round to nearest ties to even

Compute

Export

Process

Normalized Decimal:

0012345

Final Exponent:

91 (Infinity)

E-Prime:

Infinity → 11111111

Output

Sign Bit:

0

Combination Bits:

11110

Exponent Bits:

111111

Densely Packed BCD:

00000000000000000000

Final Answer (Binary):

0111101111110000000000000000

Final Answer (Hex):

0X7BF00000

Test Case 28 - Without Decimal Point (Truncate)

Input

Decimal

12345675

Exponent (Base-10)

90

Rounding Method

Truncate

Compute

Export

Process

Normalized Decimal:

1234567

Final Exponent:

91 (Infinity)

E-Prime:

Infinity → 11111111

Output

Sign Bit:

0

Combination Bits:

11110

Exponent Bits:

111111

Densely Packed BCD:

00000000000000000000

Final Answer (Binary):

0111101111110000000000000000

Final Answer (Hex):

0X7BF0000

Test Case 29 - Without Decimal Point (Round Up)

Input

Decimal

12345675

Exponent (Base-10)

91

Rounding Method

Round up

Compute

Export

Process

Normalized Decimal:

1234568

Final Exponent:

92 (Infinity)

E-Prime:

Infinity → 11111111

Output

Sign Bit:

0

Combination Bits:

11110

Exponent Bits:

111111

Densely Packed BCD:

00000000000000000000

Final Answer (Binary):

0111101111110000000000000000

Final Answer (Hex):

0X7BF0000

Test Case 30 - Without Decimal Point (Round Down)

Input

Decimal

12345675

Exponent (Base-10)

-103

Rounding Method

Round down

Compute

Export

Process

Normalized Decimal:

1234567

Final Exponent:

-102 (Denormalized)

E-Prime:

101 → 01100101

Output

Sign Bit:

0

Combination Bits:

01000

Exponent Bits:

100101

Densely Packed BCD:

00000000000000000000

Final Answer (Binary):

0010001001010000000000000000

Final Answer (Hex):

0X2250000

Test Case 31 - Without Decimal Point (Round to Nearest Ties to Even)

Input

Decimal

12345675

Exponent (Base-10)

-104

Rounding Method

Round to nearest ties to even

Compute

Export

Process

Normalized Decimal:

1234568

Final Exponent:

-103 (Denormalized)

E-Prime:

101 → 01100101

Output

Sign Bit:

0

Combination Bits:

01000

Exponent Bits:

100101

Densely Packed BCD:

00000000000000000000

Final Answer (Binary):

0010001001010000000000000000

Final Answer (Hex):

0X2250000

IV. Infinity Negative Test Cases

Test Case 32 - With Decimal Point (No Rounding)

Input

Decimal

-1234.567

Exponent (Base-10)

100

Rounding Method

Round to nearest ties to even

Compute

Export

Process

Normalized Decimal:

-1234567

Final Exponent:

97 (Infinity)

E-Prime:

Infinity → 11111111

Output

Sign Bit:

1

Combination Bits:

11110

Exponent Bits:

111111

Densely Packed BCD:

00000000000000000000

Final Answer (Binary):

1111011111110000000000000000

Final Answer (Hex):

0XFBF0000

Test Case 33 - With Decimal Point (Truncate)

Input

Decimal

-123456.789

Exponent (Base-10)

92

Rounding Method

Truncate

Compute

Export

Process

Normalized Decimal:

-1234567

Final Exponent:

91 (Infinity)

E-Prime:

Infinity → 11111111

Output

Sign Bit:

1

Combination Bits:

11110

Exponent Bits:

111111

Densely Packed BCD:

00000000000000000000

Final Answer (Binary):

1111011111110000000000000000

Final Answer (Hex):

0XFBF0000

Test Case 34 - With Decimal Point (Round-Up)

Input

Decimal

-123456.789

Exponent (Base-10)

-101

Rounding Method

Round up

Compute

Export

Process

Normalized Decimal:

-1234567

Final Exponent:

-102 (Denormalized)

E-Prime:

101 → 01100101

Output

Sign Bit:

1

Combination Bits:

01000

Exponent Bits:

100101

Densely Packed BCD:

00000000000000000000

Final Answer (Binary):

1010001001010000000000000000

Final Answer (Hex):

0XA2500000

Test Case 35 - With Decimal Point (Round Down)

Input

Decimal

-123456.789

Exponent (Base-10)

-101

Rounding Method

Round down

Compute

Export

Process

Normalized Decimal:

-1234568

Final Exponent:

-102 (Denormalized)

E-Prime:

101 → 01100101

Output

Sign Bit:

1

Combination Bits:

01000

Exponent Bits:

100101

Densely Packed BCD:

00000000000000000000

Final Answer (Binary):

1010001001010000000000000000

Final Answer (Hex):

0XA2500000

Test Case 36 - With Decimal Point (Round to Nearest Ties to Even)

Input

Decimal

-123456.789

Exponent (Base-10)

-102

Rounding Method

Round to nearest ties to even

Compute

Export

Process

Normalized Decimal:

-1234568

Final Exponent:

-103 (Denormalized)

E-Prime:

101 → 01100101

Output

Sign Bit:

1

Combination Bits:

01000

Exponent Bits:

100101

Densely Packed BCD:

00000000000000000000

Final Answer (Binary):

1010001001010000000000000000

Final Answer (Hex):

0XA2500000

Test Case 37 - Without Decimal Point (No Rounding)

Input

Decimal

-1234567

Exponent (Base-10)

91

Rounding Method

Truncate

Compute

Export

Process

Normalized Decimal:

-1234567

Final Exponent:

91 (Infinity)

E-Prime:

Infinity → 11111111

Output

Sign Bit:

1

Combination Bits:

11110

Exponent Bits:

111111

Densely Packed BCD:

00000000000000000000

Final Answer (Binary):

11110111110000000000000000

Final Answer (Hex):

0XFBF0000

Test Case 38 - Without Decimal Point (Truncate)

Input

Decimal

-12345665

Exponent (Base-10)

90

Rounding Method

Truncate

Compute

Export

Process

Normalized Decimal:

-1234566

Final Exponent:

91 (Infinity)

E-Prime:

Infinity → 11111111

Output

Sign Bit:

1

Combination Bits:

11110

Exponent Bits:

111111

Densely Packed BCD:

00000000000000000000

Final Answer (Binary):

11110111110000000000000000

Final Answer (Hex):

0XFBF0000

Test Case 39 - Without Decimal Point (Round Up)

Input

Decimal

-12345665

Exponent (Base-10)

91

Rounding Method

Round up

Compute

Export

Process

Normalized Decimal:

-1234566

Final Exponent:

92 (Infinity)

E-Prime:

Infinity → 11111111

Output

Sign Bit:

1

Combination Bits:

11110

Exponent Bits:

111111

Densely Packed BCD:

00000000000000000000

Final Answer (Binary):

11110111110000000000000000

Final Answer (Hex):

0XFBF0000

Test Case 40 - Without Decimal Point (Round Down)

Input

Decimal

-12345665

Exponent (Base-10)

-103

Rounding Method

Round down

Compute

Export

Process

Normalized Decimal:

-1234567

Final Exponent:

-102 (Denormalized)

E-Prime:

101 → 01100101

Output

Sign Bit:

1

Combination Bits:

01000

Exponent Bits:

100101

Densely Packed BCD:

00000000000000000000

Final Answer (Binary):

1010001001010000000000000000

Final Answer (Hex):

0XA2500000

Test Case 41 - Without Decimal Point (Round to Nearest Ties to Even)

Input

Decimal

-12345665

Exponent (Base-10)

-104

Rounding Method

Round to nearest ties to even

Compute

Export

Process

Normalized Decimal:

-1234566

Final Exponent:

-103 (Denormalized)

E-Prime:

101 → 01100101

Output

Sign Bit:

1

Combination Bits:

01000

Exponent Bits:

100101

Densely Packed BCD:

00000000000000000000

Final Answer (Binary):

1010001001010000000000000000

Final Answer (Hex):

0XA2500000

V. NaN Test Cases

Test Case 42 - NaN (with Exponent)

Input

Decimal

NaN

Exponent (Base-10)

89

Rounding Method

Round to nearest ties to even

Compute

Export

Process

Normalized Decimal:

NaN (NaN)

Final Exponent:

89

E-Prime:

NaN → 11111111

Output

Sign Bit:

0

Combination Bits:

11111

Exponent Bits:

111111

Densely Packed BCD:

11111111111111111111

Final Answer (Binary):

0111111111111111111111111111

Final Answer (Hex):

0X7FFFFFFF

Test Case 43 - Division by Zero (with Exponent)

Input

Decimal

NaN

Exponent (Base-10)

-100

Rounding Method

Round to nearest ties to even

Compute

Export

Process

Normalized Decimal:

NaN (NaN)

Final Exponent:

-100

E-Prime:

NaN → 11111111

Output

Sign Bit:

0

Combination Bits:

11111

Exponent Bits:

111111

Densely Packed BCD:

111111111111111111111111

Final Answer (Binary):

01111111111111111111111111111111

Final Answer (Hex):

0X7FFFFFFF

Test Case 44 - Square Root of a Negative Number (with Exponent)

Input

Decimal

NaN

Exponent (Base-10)

25

Rounding Method

Round to nearest ties to even

Compute

Export

Process

Normalized Decimal:

NaN (NaN)

Final Exponent:

25

E-Prime:

NaN → 11111111

Output

Sign Bit:

0

Combination Bits:

11111

Exponent Bits:

111111

Densely Packed BCD:

111111111111111111111111

Final Answer (Binary):

01111111111111111111111111111111

Final Answer (Hex):

0X7FFFFFFF

Test Case 45 - NaN (without Exponent)

Input

Decimal

NaN

Exponent (Base-10)

Enter exponent here...

Rounding Method

Round to nearest ties to even

Compute

Export

Process

Normalized Decimal:

NaN (NaN)

Final Exponent:

0

E-Prime:

NaN → 11111111

Output

Sign Bit:

0

Combination Bits:

11111

Exponent Bits:

111111

Densely Packed BCD:

111111111111111111111111

Final Answer (Binary):

01111111111111111111111111111111

Final Answer (Hex):

0X7FFFFFFF

Test Case 46 - Division by Zero (without Exponent)

Input

Decimal

NaN

Exponent (Base-10)

Enter exponent here...

Rounding Method

Round to nearest ties to even

Compute

Export

Process

Normalized Decimal:

NaN (NaN)

Final Exponent:

0

E-Prime:

NaN → 11111111

Output

Sign Bit:

0

Combination Bits:

11111

Exponent Bits:

111111

Densely Packed BCD:

11111111111111111111

Final Answer (Binary):

01111111111111111111111111111111

Final Answer (Hex):

0X7FFFFFFF

Test Case 47 - Square Root of a Negative Number (without Exponent)

Input

Decimal

NaN

Exponent (Base-10)

Enter exponent here...

Rounding Method

Round to nearest ties to even

Compute

Export

Process

Normalized Decimal:

NaN (NaN)

Final Exponent:

0

E-Prime:

NaN → 11111111

Output

Sign Bit:

0

Combination Bits:

11111

Exponent Bits:

111111

Densely Packed BCD:

11111111111111111111

Final Answer (Binary):

01111111111111111111111111111111

Final Answer (Hex):

0X7FFFFFFF

VI. Invalid Inputs

Test Case 48 - Invalid Decimal Input With Valid Exponent

Input

Decimal

abcdefg

Invalid input. Please enter a valid decimal number.

Exponent (Base-10)

10

Rounding Method

Truncate

Compute

Export

Process

Normalized Decimal:

Final Exponent:

E-Prime:

Output

Sign Bit:

Combination Bits:

Exponent Bits:

Densely Packed BCD:

Final Answer (Binary):

Final Answer (Hex):

Test Case 49 - Valid Decimal Input With Invalid Exponent

Input

Decimal

123456789

Exponent (Base-10)

xyz

Invalid input. Please enter a valid whole exponent.

Rounding Method

Truncate

Compute

Export

Process

Normalized Decimal:

Final Exponent:

E-Prime:

Output

Sign Bit:

Combination Bits:

Exponent Bits:

Densely Packed BCD:

Final Answer (Binary):

Final Answer (Hex):

Test Case 50 - Invalid Decimal Input With Invalid Exponent

Input

Decimal

abcdefg

Invalid input. Please enter a valid decimal number.

Exponent (Base-10)

xyz

Invalid input. Please enter a valid whole exponent.

Rounding Method

Truncate

Compute

Export

Process

Normalized Decimal:

Final Exponent:

E-Prime:

Output

Sign Bit:

Combination Bits:

Exponent Bits:

Densely Packed BCD:

Final Answer (Binary):

Final Answer (Hex):

VII. Exported Output in Text File

Successful Exporting Output

S12 Group 2

Amelia Abenoja

Zhoe Aeris Gon Gon

Harold Mojica

Anne Gabrielle Sulit

Ysobella Torio

Input

Decimal

NaN

Exponent (Base-10)

89

Rounding Method

Truncate

Compute

Export

Process

Normalized Decimal:

NaN (NaN)

Final Exponent:

89

E-Prime:

NaN → 11111111

Output

Sign Bit:

0

Combination Bits:

111111

Exponent Bits:

111111

Densely Packed BCD:

11111111111111111111

Final Answer (Binary):

0 11111 11111 1111 1111 1111 1111

Final Answer (Hex):

0X7FFFFFFF

Export successful! Check your downloads folder.

Contents of Exported Output

exported_content

FileEditView

IEEE-754 Decimal-32 Floating-Point Converter

Inputs

Decimal : NaN

Exponent (Base-10) : 89

Rounding Method : None

Process

Normalized Decimal : NaN (NaN)

Final Exponent : 89

E-Prime : NaN -> 11111111

Output

Sign Bit : 0

Combination Bits : 11111

Exponent Bits : 111111

Densely Packed BCD : 11111111111111111111

Final Answer (Binary) : 0 11111 111111 11111111111111111111

Final Answer (Hex) : 0X7FFFFFFF

Ln 1, Col 1

486 characters

100%

Unix (LF)

UTF-8