Screenshots include:
console output for concise verification results,
cat log files for processing details.

Test with input from project question:

```
PS C:\Users\Jessie\workspace\OSproj\src> javac CredVerify.java
PS C:\Users\Jessie\workspace\OSproj\src> java CredVerify 4388576018402626 4388576018410707

Writing logs to C:\Users\Jessie\workspace\OSproj\credLogs\cred2021-04-17--19-59-53-487

VERIFICATION RESULTS:
Input Number: 0 Card: 4388576018402626 is invalid.
Input Number: 1 Card: 4388576018410707 is valid. It is issued by Visa.

PS C:\Users\Jessie\workspace\OSproj\src>
```

```
PS C:\Users\Jessie\workspace\OSproj\credLogs> cat cred2021-04-17--19-59-53-487/input*.txt

Evaluating 4388576018402626
Length = 16
Processing odd places = 6 + 6 + 0 + 8 + 0 + 7 + 8 + 3
Sum for odd places = 38
Processing even places = 4 + 4 + 8 + 2 + (1 + 2) + (1 + 0) + (1 + 6) + 8
Sum for even places = 37
Total = 37 + 38 = 75
Total is NOT divisible by 10.
Input Number: 0 Card: 4388576018402626 is invalid.

Evaluating 4388576018410707
Length = 16
Processing odd places = 7 + 7 + 1 + 8 + 0 + 7 + 8 + 3
Sum for odd places = 41
Processing even places = 0 + 0 + 8 + 2 + (1 + 2) + (1 + 0) + (1 + 6) + 8
Sum for even places = 29
Total = 29 + 41 = 70
Total is divisible by 10.
Input Number: 1 Card: 4388576018410707 is valid. It is issued by Visa.
PS C:\Users\Jessie\workspace\OSproj\credLogs>
```

Bad input:

```
PS C:\Users\Jessie\workspace\OSproj\src> java CredVerify 123456789123 123456789123456789123 7123456789123 3423456789123 1234abcdefg56

Writing logs to C:\Users\Jessie\workspace\OSproj\credLogs\cred2021-04-17--20-10-28-915

VERIFICATION RESULTS:
Input Number: 0 Card: 123456789123 is invalid.
Input Number: 1 Card: 123456789123456789123 is invalid.
Input Number: 2 Card: 7123456789123 is invalid.
Input Number: 3 Card: 3423456789123 is invalid.
Input Number: 4 Card: 1234abcdefg56 is invalid.

PS C:\Users\Jessie\workspace\OSproj\src>
```

```
PS C:\Users\Jessie\workspace\OSproj\credLogs> cat cred2021-04-17--20-10-28-915/input*.txt

Evaluating 123456789123
Length = 12
Incorrect length.
Input Number: 0 Card: 123456789123 is invalid.

Evaluating 123456789123456789123
Length = 21
Incorrect length.
Input Number: 1 Card: 123456789123456789123 is invalid.

Evaluating 7123456789123
Length = 13
Incorrect prefix.
Input Number: 2 Card: 7123456789123 is invalid.

Evaluating 3423456789123
Length = 13
Incorrect length for company with that prefix.
Input Number: 3 Card: 3423456789123 is invalid.

Evaluating 1234abcdefg56
Length = 13
Non-digit.
Input Number: 4 Card: 1234abcdefg56 is invalid.
PS C:\Users\Jessie\workspace\OSproj\credLogs>
```

Negative number input (the hyphen is considered a non-digit character):

```
PS C:\Users\Jessie\workspace\OSproj\src> java CredVerify -342345678912345

Writing logs to C:\Users\Jessie\workspace\OSproj\credLogs\cred2021-04-17--20-14-58-247

VERIFICATION RESULTS:
Input Number: 0 Card: -342345678912345 is invalid.

PS C:\Users\Jessie\workspace\OSproj\src>
```

```
PS C:\Users\Jessie\workspace\OSproj\credLogs> cat cred2021-04-17--20-14-58-247/input*.txt

Evaluating -342345678912345
Length = 16
Non-digit.
Input Number: 0 Card: -342345678912345 is invalid.
PS C:\Users\Jessie\workspace\OSproj\credLogs>
```

contd. on next page

Input showing different valid prefixes and card lengths:

```
PS C:\Users\Jessie\workspace\OSproj\src> java CredVerify 348857601831070 378857601831073 6388576018460707 63885760184607072 638857601
846070700 6388576018460707002 5188576018410706 5288576018410705 5388576018410704 5488576018410703 5588576018410702 4388576018415 4388
576018410707

Writing logs to C:\Users\Jessie\workspace\OSproj\credLogs\cred2021-04-17--20-42-59-751

VERIFICATION RESULTS:
Input Number: 0 Card: 348857601831070 is valid. It is issued by American Express.
Input Number: 1 Card: 378857601831073 is valid. It is issued by American Express.
Input Number: 2 Card: 6388576018460707 is valid. It is issued by Discover Card.
Input Number: 3 Card: 63885760184607072 is valid. It is issued by Discover Card.
Input Number: 4 Card: 638857601846070700 is valid. It is issued by Discover Card.
Input Number: 5 Card: 6388576018460707002 is valid. It is issued by Discover Card.
Input Number: 6 Card: 5188576018410706 is valid. It is issued by Mastercard.
Input Number: 7 Card: 5288576018410705 is valid. It is issued by Mastercard.
Input Number: 8 Card: 5388576018410704 is valid. It is issued by Mastercard.
Input Number: 9 Card: 5488576018410703 is valid. It is issued by Mastercard.
Input Number: 10 Card: 5588576018410702 is valid. It is issued by Mastercard.
Input Number: 11 Card: 4388576018415 is valid. It is issued by Visa.
Input Number: 12 Card: 4388576018410707 is valid. It is issued by Visa.

PS C:\Users\Jessie\workspace\OSproj\src>
```

cat using regex goes in order of filenames (for example "input10.txt" comes before "input2.txt"):

```
PS C:\Users\Jessie\workspace\OSproj\credLogs> cat cred2021-04-17--20-42-59-751/input*.txt

Evaluating 348857601831070
Length = 15
Processing even places = (1 + 4) + 2 + (1 + 6) + 0 + (1 + 4) + (1 + 6) + 8
Sum for even places = 34
Processing odd places = 0 + 0 + 3 + 1 + 6 + 5 + 8 + 3
Sum for odd places = 26
Total = 34 + 26 = 60
Total is divisible by 10.
Input Number: 0 Card: 348857601831070 is valid. It is issued by American Express.

Evaluating 378857601831073
Length = 15
Processing even places = (1 + 4) + 2 + (1 + 6) + 0 + (1 + 4) + (1 + 6) + (1 + 4)
Sum for even places = 31
Processing odd places = 3 + 0 + 3 + 1 + 6 + 5 + 8 + 3
Sum for odd places = 29
Total = 31 + 29 = 60
Total is divisible by 10.
Input Number: 1 Card: 378857601831073 is valid. It is issued by American Express.

Evaluating 5588576018410702
Length = 16
Processing even places = 0 + 0 + 8 + 2 + (1 + 2) + (1 + 0) + (1 + 6) + (1 + 0)
Sum for even places = 22
Processing odd places = 2 + 7 + 1 + 8 + 0 + 7 + 8 + 5
Sum for odd places = 38
Total = 22 + 38 = 60
Total is divisible by 10.
Input Number: 10 Card: 5588576018410702 is valid. It is issued by Mastercard.
```

```
Evaluating 4388576018415
Length = 13
Processing even places = 2 + (1 + 6) + 0 + (1 + 4) + (1 + 6) + 6
Sum for even places = 27
Processing odd places = 5 + 4 + 1 + 6 + 5 + 8 + 4
Sum for odd places = 33
Total = 27 + 33 = 60
Total is divisible by 10.
Input Number: 11 Card: 4388576018415 is valid. It is issued by Visa.

Evaluating 4388576018410707
Length = 16
Processing even places = 0 + 0 + 8 + 2 + (1 + 2) + (1 + 0) + (1 + 6) + 8
Sum for even places = 29
Processing odd places = 7 + 7 + 1 + 8 + 0 + 7 + 8 + 3
Sum for odd places = 41
Total = 29 + 41 = 70
Total is divisible by 10.
Input Number: 12 Card: 4388576018410707 is valid. It is issued by Visa.

Evaluating 6388576018460707
Length = 16
Processing even places = 0 + 0 + 8 + 2 + (1 + 2) + (1 + 0) + (1 + 6) + (1 + 2)
Sum for even places = 24
Processing odd places = 7 + 7 + 6 + 8 + 0 + 7 + 8 + 3
Sum for odd places = 46
Total = 24 + 46 = 70
Total is divisible by 10.
Input Number: 2 Card: 6388576018460707 is valid. It is issued by Discover Card.
```

```
Evaluating 63885760184607072
Length = 17
Processing even places = (1 + 4) + (1 + 4) + (1 + 2) + (1 + 6) + 0 + (1 + 4) + (1 + 6) + 6
Sum for even places = 38
Processing odd places = 2 + 0 + 0 + 4 + 1 + 6 + 5 + 8 + 6
Sum for odd places = 32
Total = 38 + 32 = 70
Total is divisible by 10.
Input Number: 3 Card: 63885760184607072 is valid. It is issued by Discover Card.

Evaluating 638857601846070700
Length = 18
Processing even places = 0 + 0 + 0 + 8 + 2 + (1 + 2) + (1 + 0) + (1 + 6) + (1 + 2)
Sum for even places = 24
Processing odd places = 0 + 7 + 7 + 6 + 8 + 0 + 7 + 8 + 3
Sum for odd places = 46
Total = 24 + 46 = 70
Total is divisible by 10.
Input Number: 4 Card: 638857601846070700 is valid. It is issued by Discover Card.

Evaluating 6388576018460707002
Length = 19
Processing even places = 0 + (1 + 4) + (1 + 4) + (1 + 2) + (1 + 6) + 0 + (1 + 4) + (1 + 6) + 6
Sum for even places = 38
Processing odd places = 2 + 0 + 0 + 0 + 4 + 1 + 6 + 5 + 8 + 6
Sum for odd places = 32
Total = 38 + 32 = 70
Total is divisible by 10.
Input Number: 5 Card: 6388576018460707002 is valid. It is issued by Discover Card.
```

```
Evaluating 5188576018410706
Length = 16
Processing even places = 0 + 0 + 8 + 2 + (1 + 2) + (1 + 0) + (1 + 6) + (1 + 0)
Sum for even places = 22
Processing odd places = 6 + 7 + 1 + 8 + 0 + 7 + 8 + 1
Sum for odd places = 38
Total = 22 + 38 = 60
Total is divisible by 10.
Input Number: 6 Card: 5188576018410706 is valid. It is issued by Mastercard.

Evaluating 5288576018410705
Length = 16
Processing even places = 0 + 0 + 8 + 2 + (1 + 2) + (1 + 0) + (1 + 6) + (1 + 0)
Sum for even places = 22
Processing odd places = 5 + 7 + 1 + 8 + 0 + 7 + 8 + 2
Sum for odd places = 38
Total = 22 + 38 = 60
Total is divisible by 10.
Input Number: 7 Card: 5288576018410705 is valid. It is issued by Mastercard.

Evaluating 5388576018410704
Length = 16
Processing even places = 0 + 0 + 8 + 2 + (1 + 2) + (1 + 0) + (1 + 6) + (1 + 0)
Sum for even places = 22
Processing odd places = 4 + 7 + 1 + 8 + 0 + 7 + 8 + 3
Sum for odd places = 38
Total = 22 + 38 = 60
Total is divisible by 10.
Input Number: 8 Card: 5388576018410704 is valid. It is issued by Mastercard.
```

```
Evaluating 5488576018410703
Length = 16
Processing even places = 0 + 0 + 8 + 2 + (1 + 2) + (1 + 0) + (1 + 6) + (1 + 0)
Sum for even places = 22
Processing odd places = 3 + 7 + 1 + 8 + 0 + 7 + 8 + 4
Sum for odd places = 38
Total = 22 + 38 = 60
Total is divisible by 10.
Input Number: 9 Card: 5488576018410703 is valid. It is issued by Mastercard.
PS C:\Users\Jessie\workspace\OSproj\credLogs> |
```