RDE Systems
Coding Challenge 3.0
Official Contest Rules and Detailed Specifications

Background

RDE wants to get to know programmers who naturally enjoy a good challenge and like to go above-and-beyond in all that they do. This is a good opportunity for great programmers to get to know RDE and why we're special.

Description

For a detailed description of the RDE Systems Coding Challenge, see http://rde.org/codingchallenge/.

Timeline

- Submission Period Begins: March 10, 2017
- Submission Deadline: April 4, 2017 at 23:59:59 EST (11:59:59 PM EST) (extended from the original submission deadline of March 27, 2017)
- Winners Announced: May 1, 2017

Because of the unique nature and scope of the Challenge, RDE reserves the right to modify any dates or deadlines set forth above, by posting a notification of the amended deadline (at this location: http://rde.org/codingchallenge/.)

Judging and Evaluation Criteria

Submissions will be evaluated and judged by a panel of RDE Systems software developers and network engineers, and independent judges retained by RDE Systems. **For a detailed explanation of the evaluation criteria and contest scoring, please see the Scoring Rubric set forth in the Official Contest Rules, below.**

Submission Requirements

1. **Permissible Languages**. Submissions must be coded using one of the following server-side languages:

   - PHP
   - Node.js
   - ColdFusion (CFML)
   - Python

2. **Permissible Databases.** Submissions must use one of the following database systems to store data:

- MySQL
- Microsoft SQL Server (Express Edition)
- NoSQL

3. **Submissions may not utilize browser plugins.** Submissions utilizing browser plugins will be disqualified. For more information, see "Requirements", below.

4. **Submissions must be the work of a single individual.** Submissions which represent the work of more than one individual, or which are submitted by a single individual on behalf of a team of two or more, will be disqualified.

5. **Submissions must be received by the deadline,** April 4, 2017**, 23:59:59** EST (extended from the original submission deadline of March 27, 2017). Submissions for which the upload is not complete by April 4, 2017, 23:59:59 EST (or in the case of submissions which are made via US postal mail, which have not been received by April 4, 2017, 23:59:59 EST), will be disqualified.

6. **Submission Procedure**. Contest entries may be submitted either 1.) by uploading via the Official Entry Form to our website at http://rde.org/codingchallenge/ , or 2.) by sending a CD or DVD disc via US postal mail to: RDE Systems, 275 Paterson Avenue, Floor 1 Suite E, Little Falls, NJ 07424**. Submissions received via any other means will not be accepted**. You may revise your entry and resubmit it as many times as you like. The last submission we receive from you before the deadline will be the only one used in judging. **For a detailed explanation of the contest submission procedure, please see Paragraph 8 of Contest Submission Requirements set forth in the Detailed Specifications, below.**

Detailed Specifications for Coding Challenge Submissions

Narrative

The goal is to visualize the geographical location of your website's visitors. At the time of visit, the visitor's geolocation is obtained and then stored into a database. An administrative dashboard will then allow users with the correct login to view a map containing markers for the location of all current visitors. (i.e. active within the last 5 minutes)

Data

You will need to store the IP address and time of visit of all visitors. In addition, the geographical coordinates of each visitor should be stored when possible. A sample dataset with IP addresses and timestamps will be provided to participants in order to fill their database. This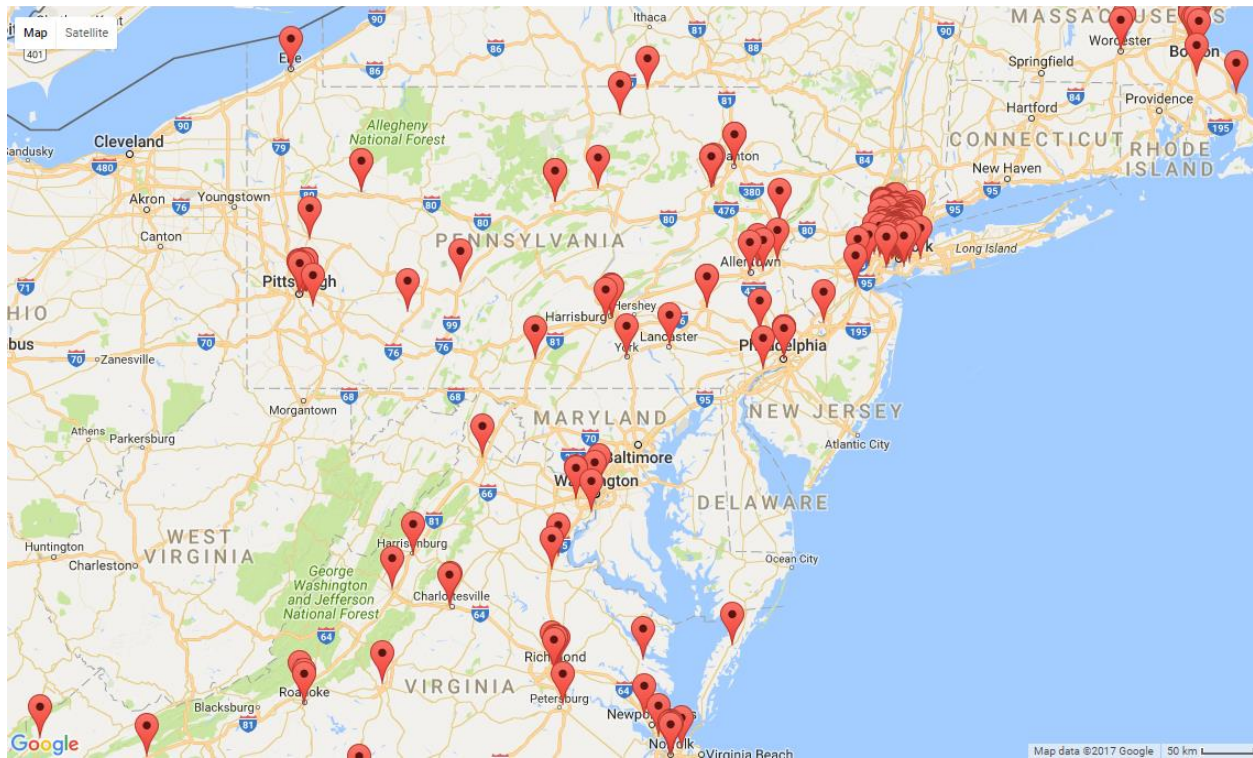 dataset is to be used to populate the aforementioned map. (http://rde.org/codingchallenge/2017spring/sampledataset.csv)

Screens

Public Page: A public (landing) page should, at a minimum, show the IP address of the visitor and display his location on a map.

Login Page: A login page will have a simple html form with text fields for username and password. The administrative username and password may be hardcoded or stored in the database.

Admin Page: An admin page will display a map of all current website visitors (i.e. active within the last 5 minutes) and display their location on a map with markers. This page needs to have a date filter in order to display visitor's data in the selected date range.

Below is a sample of what the map and markers might look like.

Geolocation Mapping

You can use any free Mapping API to render the map and markers. (ex: Google Maps, MapBox, Open Street Map…) The visitors' geolocation will first be requested by using the browser's built in HTML5 functionalities, if a visitor chooses not to use geolocation from his device, his IP address will be used along with a third-party Geolocation API in order to fetch its associated coordinates

Bonus Points

Participants that display this data in real-time on a map will be granted extra points. When a visitor accesses a webpage, a map with a marker will automatically display the user's location without refreshing the page. When a second or third visitor accesses the same page, another marker would be added to the map without refreshing the page.

Contest Submission Requirements

1. All code in a submission, with the exception of open-source libraries, must be written by a single person, the contestant. We will not accept team submissions.
2. Submissions must be uploaded by 23:59:59 EST on the deadline, 04/04/2017 (extended from the original submission deadline of 03/27/2017)

3. All contestants are in the running for an internship opportunity, regardless of how they place in the contest. Likewise, your placing in the contest does not guarantee an internship. This contest is one way to show off your skills, but there are many other factors in recruiting.

4. Allowed server-side languages:
   - PHP
   - Node.js
   - ColdFusion (CFML)
   - Python
5. You must use one of the following database systems to store data:
   - MySQL
   - Microsoft SQL Server (Express edition)
   - NoSQL
6. Submissions may not utilize browser plugins. Submissions utilizing browser plugins will be disqualified.
7. Your web app must work in the latest stable version of either Mozilla Firefox or Google Chrome (both is not necessary; tell us which one in your submission). We want you to use the latest technology available in modern browsers, not waste your time on cross-browser compatibility!
8. Submission Procedure.
   a. A submission will be a single zip file with six components:
      i. The source code for your solution, in its own subfolder. All code must be in plaintext, ASCII or UTF-8 encoded. Images and other documents are allowed, but any submissions including compiled executable code will be disqualified.
      ii. A database definition script, written in SQL. This script will contain CREATE TABLE statements and, if necessary, other database object creation commands and INSERT statements. The entire database setup should be completed by running this script.
      iii. A file describing the setup process in simple step-by-step instructions, named "setup-instructions". This may be a text file (setup-instructions.txt), Microsoft Office Word Document (setup-instructions.doc or setup-instructions.docx), Open Document format (setup-instructions.odt), or PDF (setup-instructions.pdf).
      iv. A screenshot of your working web page. It must be in one of the following lossless image formats: PNG (.png), GIF (.gif), or BMP (.bmp).
      v. A contact information file, containing your full name, mailing address, date of birth, state of legal residence, and a statement that your submission is your original work.
      vi. Optionally, if you wish to be considered for an internship, you may include your resume in the zip file.
   b. The submission zip file must be no larger than 100 MB. There is no legitimate reason for your source code, any front-end libraries, and the documentation to be larger than this. Submissions with zip files larger than 100 MB will be disqualified.
   c. There are two allowed methods of transferring your zip file to RDE.

- Upload your submission via the Official Entry Form on our website at
http://rde.org/codingchallenge/
- Burn the zip file to a CD or DVD disc and send it, along with a printed Official
Entry Form, via US Postal Mail to:

    RDE Systems
    275 Paterson Ave
    Floor 1 Suite E
    Little Falls, NJ 07424

d. Submissions uploaded via the Official Entry Form must be received by the submission deadline, April 4, 2017, 23:59:59 EST (extended from the original submission deadline of March 27, 2017).

e. Submissions sent by mail must reach RDE by the submission deadline, April 4, 2017, 23:59:59 EST (extended from the original submission deadline of March 27, 2017).

f. Submissions received via any other means will not be accepted.

g. You may revise your entry and resubmit it as many times as you like. The last submission we receive from you before the deadline will be the only one used in judging.

Scoring Rubric

By participating in the Challenge, each entrant unconditionally accepts and agrees to comply with and abide by the decisions of Sponsor and judges, which shall be final and binding in all respects.

Submissions will be evaluated and judged by a panel of RDE Systems software developers and network engineers, and independent judges retained by RDE Systems. The following criteria will be applied in judging submissions.

Criterion	Points Awarded / 100
Functionality – *Your submission must fulfill requirements laid out in the Detailed Specifications, and solve any edge- and corner-case problems. If your submission contains bugs, you will lose points in this category.*	Maximum of 40 points
Code Readability – *Your source code should use good variable names, consistent and readable formatting and white-space usage, appropriate functional decomposition, and, if applicable, should follow Object-Oriented principles. Code comments are not required, only recommended for portions of code that are confusing. Avoid anti-patterns like dead code or copy/pasted code.*	Maximum of 20 points
User experience and design – *Your design should be good-looking and easy to use.* • *Users should be able to understand how the web application works without training or reading a manual.* • *Use visual cues instead of text instructions, because users do not like to read.* • *Keep it simple. Don't clutter the page or users will have difficulty figuring out what to focus on.* • *Search the Internet for more user experience design principles; there is a lot of useful advice.*	Maximum of 20 points
Performance – *Your application should be efficient and make no unnecessary use of computing resources (CPU, RAM, disk space, or network bandwidth). For example, SQL queries should be optimized and tables indexed for efficiency. Be extra careful with expensive operations inside loops and other code segments that get run repeatedly, and be mindful of how performance can impact the user experience.* *There is one exception: please do not minify JavaScript, CSS or HTML code. The minifying process (removing all whitespace and shortening variable names) makes it hard for judges to read code and provides a relatively small benefit.*	Maximum of 10 points
Security – *avoid common web application vulnerabilities.*	Maximum of 10 points

Terms & Conditions

OFFICIAL CONTEST RULES

RDE Systems Coding Challenge (the *"Challenge"*)

NO PURCHASE OR PAYMENT IS NECESSARY TO ENTER OR TO WIN. A PURCHASE OR PAYMENT WILL NOT IMPROVE YOUR CHANCES OF WINNING. THIS CONTEST IS VOID WHERE PROHIBITED.

PARTICIPATION IN THE CHALLENGE SIGNIFIES THE ENTRANT'S ACCEPTANCE OF THESE OFFICIAL CONTEST RULES AND OTHER REQUIREMENTS SET FORTH HEREIN.

SPONSOR: The sponsor of this Challenge is RDE System Support Group, LLC, 44 Cedar Cliff Drive, Wayne, NJ 07470 **(*"Sponsor"*).**

CHALLENGE DESCRIPTION: The Challenge begins at 12:00:00 (12:00 PM) EST on Friday, March 10, 2017 and ends at 23:59:59 (11:59:59 PM) EST on Tuesday, April 4, 2017 (*"Challenge Period"*). Entry into the Challenge does not constitute entry into any other challenge or promotion, including, without limitation, other similar challenges or promotions offered by Sponsor. All entrants in the Challenge, who indicate interest in an internship with RDE Systems by on the Official Entry Form will be considered for an internship opportunity, regardless of whether they are awarded a prize in the Challenge. Being awarded a prize in the Challenge does not guarantee being selected for an internship. Indicating an interest in an internship with RDE Systems does not increase or decrease an entrant's chances of being awarded a prize in the Challenge. **By participating in the Challenge, each entrant unconditionally accepts and agrees to comply with and abide by these Official Contest Rules and the decisions of Sponsor and/or the individual judges, which shall be final and binding in all respects.**

ELIGIBILITY: The Challenge is open only to individuals who are citizens or lawful residents of the U.S., including individuals who are lawfully resident in the U.S. pursuant to a F-1 student visa or other visa, and are 18 years old or older as of their time of entry in the Challenge. Employees of Sponsor, and/or any other individual or entity associated with the development, judging, or administration of the Challenge as well as members of such persons' immediate families (spouses, children, siblings, parents), and persons living in the same household as such persons, whether or not related, are not eligible to participate in the Challenge.

HOW TO ENTER: To enter go to the website located at http://rde.org/codingchallenge/ (the Challenge Website), complete the Official Entry Form, and submit your Submission. Fields indicated as mandatory on the Official Entry Form must be filled out in order for the entrant's submission to be eligible. Submitting false or deliberately misleading information on the Official Entry Form (including false information regarding the name or identity of the entrant) will result in the entrant's submission being disqualified. In the event of a dispute regarding the identity of the individual who actually submitted the entry, which cannot be resolved to Sponsor's satisfaction, the affected entry will be deemed ineligible. Each Submission entered into the Challenge must meet the **Submission Requirements** described above and the requirements of these Official Contest Rules. Any Submission that, in Sponsor's sole discretion, violates the Official Contest Rules will be disqualified. Submissions must be received during the Challenge Period to be eligible. Sponsor is the official timekeeper for the Challenge. Except as otherwise stated in these Official Contest Rules, personal information collected in connection with the Challenge will not be used by Sponsor other than in connection with the Challenge, and in accordance with any additional consent given by an entrant at the time of entry. All entry information and materials, including any copy of the Submission submitted to Sponsor, become the property of Sponsor and will

not be acknowledged or returned. Proof of submission is not considered proof of delivery to or receipt of such entry. Furthermore, Sponsor shall have no liability for any Submission that is lost, intercepted, or not received by Sponsor. Sponsor assumes no liability or responsibility for any error, omission, interruption, deletion, theft, or destruction or unauthorized access to, or alteration of, Submissions.

REPRESENTATIONS AND WARRANTIES/INDEMNIFICATION: By participating in the Challenge, each entrant represents, warrants, and covenants as follows: (a) entrant is the sole author, creator, and owner of the Submission; (b) the Submission is not the subject of any actual or threatened litigation or claim; (c) the Submission does not and will not violate or infringe upon the intellectual property rights, privacy rights, publicity rights, or other legal rights of any third party; (d) the Submission does not and will not contain any harmful or malicious computer code (including code referred to as "malware," "viruses" or "worms"); (e) the Submission, and entrants or Sponsor's use of the Submission, does not and will not violate any applicable laws or regulations, including, without limitation, applicable export control laws and regulations of the U.S. and other jurisdictions, and (f) entrant is of the legal age of majority in entrant's state of residence, meets the eligibility requirements set forth in these Official Contest Rules, is legally empowered to make the representations and warranties contained herein, and is legally empowered to accept and be bound by these Official Contest Rules. If the Submission includes any third party works (such as third party content or open source code), entrant must be able to provide, upon Sponsor's request, all appropriate licenses and releases for such third party works. In the event entrant cannot provide all required licenses and releases, Sponsor reserves the right, in Sponsor's sole discretion, to disqualify the applicable Submission, or seek to secure the licenses and releases for Sponsor's benefit and allow the applicable Submission to remain in the Challenge. Entrants will indemnify, defend, and hold harmless Sponsor from and against all third party claims, actions, or proceedings of any kind and from any and all damages, liabilities, costs, and expenses relating to or arising from entrant's Submission or any breach or alleged breach of any of the representations, warranties, and covenants of entrant hereunder. Sponsor reserves the right to disqualify any Submission that Sponsor, in its sole discretion, deems to violate these Official Contest Rules.

INTELLECTUAL PROPERTY RIGHTS: Except as otherwise provided in these Official Contest Rules, each entrant retains title and full ownership in and to their Submission. Entrant expressly reserves all intellectual property rights not expressly granted under this Agreement. In consideration for participating in the Challenge, each entrant hereby irrevocably grants to Sponsor a non-exclusive, royalty free, perpetual, irrevocable, worldwide, license and right, with the right to sublicenses, under entrant's intellectual property right, to the extent thereof, to modify and create derivative works of the Submission, or any portions thereof, and use the Submission for the purpose of achieving the same.

PUBLICITY RELEASE: By participating in the Challenge, in addition to any other rights granted herein or which may be granted in any other agreement entered into between Sponsor and any entrant in the Challenge, each entrant hereby irrevocably (a) grants to Sponsor and the right to use such entrant's name, likeness, image, and biographical information in any and all media for any purpose, including, without limitation, advertising and promotional purposes relating to the Challenge and (b) releases Sponsor from any liability with respect thereto. Further, by participating in the Challenge, each entrant agrees to grant the Sponsor the right to publically display the Submission, including, without limitation, for advertising and promotional purposes relating to the Challenge.

WINNER SELECTION/EVALUATION CRITERIA:

By participating in the Challenge, each entrant unconditionally accepts and agrees to comply with and abide by the decisions of Sponsor and/or the individual judges, which shall be final and binding in all respects.

Submissions will be evaluated and judged by a panel of RDE Systems software developers and network engineers, and independent judges retained by RDE Systems. The following criteria will be applied in judging submissions.

Criterion	Points Awarded / 100
Functionality – *Your submission must fulfill requirements laid out in the Detailed Specifications, and solve any edge- and corner-case problems. If your submission contains bugs, you will lose points in this category.*	Maximum of 40 points
Code Readability – *Your source code should use good variable names, consistent and readable formatting and white-space usage, appropriate functional decomposition, and, if applicable, should follow Object-Oriented principles. Code comments are not required, only recommended for portions of code that are confusing. Avoid anti-patterns like dead code or copy/pasted code.*	Maximum of 20 points
User experience and design – *Your design should be good-looking and easy to use.* • *Users should be able to understand how the web application works without training or reading a manual.* • *Use visual cues instead of text instructions, because users do not like to read.* • *Keep it simple. Don't clutter the page or users will have difficulty figuring out what to focus on.* • *Search the Internet for more user experience design principles; there is a lot of useful advice.*	Maximum of 20 points
Performance – *Your application should be efficient and make no unnecessary use of computing resources (CPU, RAM, disk space, or network bandwidth). For example, SQL queries should be optimized and tables indexed for efficiency. Be extra careful with expensive operations inside loops and other code segments that get run repeatedly, and be mindful of how performance can impact the user experience.* *There is one exception: please do not minify JavaScript, CSS or HTML code. The minifying process (removing all whitespace and shortening variable names) makes it hard for judges to read code and provides a relatively small benefit.*	Maximum of 10 points
Security – *avoid common web application vulnerabilities.*	Maximum of 10 points

NOTICE TO WINNERS: Attempts to notify potential winners will be made using the contact information provided on the winner's Official Entry Form. Sponsor is not responsible for e-mail or other communication problems of any kind. If, despite reasonable efforts, a potential winner does not respond within five (5) days of the first notification attempt (or a shorter time as exigencies may require), or if the prize or prize notification is returned as unclaimed or undeliverable to such potential winner, such potential winner will forfeit his or her prize and an alternate winner may be selected. If any potential prize winner is found to be ineligible, or if he or she has not complied with these Official Contest Rules or declines the applicable prize for any reason prior to award, such potential prize winner will be disqualified and an alternate winner may be selected. Sponsor may successively attempt to contact up to two (2) potential prize winners in accordance with such procedure, and if there is still no confirmed prize winner after such attempts have been made, if any, the applicable prize may go unawarded.

ANTICIPATED NUMBER OF ENTRANTS: Sponsor cannot accurately predict the number of entrants who will participate in the Challenge. Three (3) submissions will be selected from eligible entries as winners, in accordance with the Winner Selection/Evaluation Criteria set forth above. Actual odds of winning depend on the number and substantive content of eligible entries received.

PRIZES:

There will be a tiered award structure:

- $800 total prize purse consisting of three prizes:
    - [0]th Place: $500
    - [1]st Place: $200
    - [2]nd Place: $100

- Prizes will be awarded in the form of an Amazon.com gift card.

GENERAL PRIZE CONDITIONS: The potential winner may be required to execute one or more documents, including an Affidavit of Eligibility, a Liability Release, a Publicity Release (where imposing such condition is legal), and Prize Receipt (collectively ***"Prize Claim Documents"***). If a winner fails or refuses to sign and return all Prize Claim Documents within five (5) days of Sponsor's request (or a shorter time as exigencies may require), the winner may be disqualified and an alternate winner may be selected. No more than the advertised number of prizes will be awarded. Prizes will be delivered only to an address in the U.S. No substitution or transfer of prizes will be allowed, except Sponsor reserves the right in its sole discretion to substitute prizes of comparable value, in whole or in part, for any reason. **THE WINNER IS RESPONSIBLE FOR REPORTING AND PAYING ANY INCOME TAXES OR OTHER TAXES THAT MAY APPLY TO ACCEPTING A PRIZE; SPONSOR IS NOT RESPONSIBLE FOR AND WILL NOT WITHHOLD OR PAY ANY SUCH TAXES.**

DATES/DEADLINES: Because of the unique nature and scope of the Challenge, Sponsor reserve the right, in addition to those other rights reserved herein, to modify any dates or deadlines set forth in these Official Rules or otherwise governing the Challenge.

GENERAL LIABILITY RELEASE/FORCE MAJEURE: Each entrant agrees that Sponsor (a) shall not be responsible or liable for any losses, damages, or injuries of any kind (including death) resulting from participation in the Challenge or any Challenge-related activity, or from entrants' acceptance, receipt,

possession, use, or misuse of any prize, and (b) has not made any warranty, representation, or guarantee, express or implied, in fact or in law, with respect to any prize, including, without limitation, regarding such prize's merchantability or fitness for a particular purpose. Entrants will indemnify, defend, and hold harmless Sponsor from and against all third party claims, actions, or proceedings of any kind and from any and all damages, liabilities, costs, and expenses relating to or arising from entrant's participation in the Challenge. Sponsor assumes no responsibility for any damage to an entrant's computer system which is occasioned by accessing the Website or other Challenge-related websites or participating in the Challenge, or for any computer system, phone line, hardware, software, or program malfunctions, or other errors, failures, delayed computer transmissions, or network connections that are human or technical in nature. Without limiting the generality of the foregoing, Sponsor is not responsible for incomplete, illegible, misdirected, misprinted, late, lost, postage-due, damaged, or stolen entries or prize notifications; or for lost, interrupted, inaccessible, or unavailable networks, servers, satellites, Internet Service Providers, websites, or other connections; or for miscommunications, failed, jumbled, scrambled, delayed, or misdirected computer, telephone cable transmissions or other communications; or for any technical malfunctions, failures, difficulties, or other errors of any kind or nature; or for the incorrect or inaccurate capture of information, or the failure to capture any information. Sponsor reserves the right in its sole discretion to disqualify any individual who is found to be tampering with the entry process or the operation of the Challenge or Website or other Challenge-related websites, to be acting in violation of these Official Rules, or to be acting in an unsportsmanlike or disruptive manner, or with the intent to disrupt or undermine the legitimate operation of the Challenge, or to annoy, abuse, threaten, or harass any other person, and Sponsor reserves the right to seek damages and other remedies from any such individual to the fullest extent permitted by law. In the event an insufficient number of eligible entries are received or Sponsor is prevented from awarding the prize or continuing with the Challenge as contemplated herein by any event beyond its control, including, without limitation, fire, flood, natural or man-made epidemic, earthquake, explosion, labor dispute or strike, act of God or public enemy, satellite or equipment failure, riot or civil disturbance, terrorist threat or activity, war (declared or undeclared) or any federal state or local government law, order, or regulation, public health crisis, order of any court or jurisdiction, or other cause not reasonably within Sponsor's control (Force Majeure), Sponsor shall have the right to modify, suspend, or terminate the Challenge. If the Challenge is terminated for Force Majeure before expiration of the Challenge Period, Sponsor will (if reasonably possible) select a winner from all eligible, non-suspect entries received as of the date of the event giving rise to the termination. These Official Rules cannot be modified or amended in any way except in a written document issued in accordance with the law by a duly authorized representative of Sponsor. The invalidity or unenforceability of any provision of these Official Contest Rules shall not affect the validity or enforceability of any other provision. In the event that any provision is determined to be invalid or otherwise unenforceable or illegal, these Official Contest Rules shall otherwise remain in effect and shall be construed in accordance with their terms as if the invalid or illegal provision were not contained herein.

GOVERNING LAW/JURISDICTION: ALL ISSUES AND QUESTIONS CONCERNING THE CONSTRUCTION, VALIDITY, INTERPRETATION, AND ENFORCEABILITY OF THESE OFFICIAL RULES OR THE RIGHTS AND OBLIGATIONS OF ENTRANTS, AND/OR SPONSOR IN CONNECTION WITH THE CHALLENGE SHALL BE GOVERNED BY AND CONSTRUED IN ACCORDANCE WITH THE LAWS OF THE STATE OF NEW JERSEY WITHOUT GIVING EFFECT TO ANY CHOICE OF LAW OR CONFLICT OF LAWS RULES OR PROVISIONS. ANY LEGAL CLAIMS ARISING FROM OR RELATING TO THE CHALLENGE OR THESE OFFICIAL RULES MUST BE BROUGHT IN THE FEDERAL OR STATE COURTS LOCATED IN PASSAIC COUNTY, NEW JERSEY.

WINNERS LIST/OFFICIAL RULES: To obtain any legally-required winners list (after the conclusion of the Challenge) please email the Sponsor at the following email address and request the official winners list. codingchallenge@rde.org

A printable copy of these Official Contest Rules may be obtained here: http://rde.org/codingchallenge/2017spring/rules.pdf