



Standard Bank Technology Impact Challenge 2019 Competition Rules (“Rules”)

1. INTRODUCTION

- 1.1 These Rules must be read together with Standard Bank Technology Impact Challenge Competition terms and conditions (“**Terms**”).
- 1.2 Should there be a discrepancy between these Rules and the Terms, these Rules will prevail.
- 1.3 The format of the Competition will follow two phases:
 - 1.3.1 Heats
 - 1.3.2 Finals
 - 1.3.2.1 HashBlock – answering of technical Problems with binary answers.
 - 1.3.2.2 IdeaChain – developing a prototype using Artificial Intelligence and/or Machine Learning to solve a Problem defined at the Finals.

2. REGISTRATION OF TERTIARY INSTITUTIONS

- 2.1.1 Tertiary institutions that registered for the competition that took place during the 2018 period will automatically be registered for the Competition as a participating tertiary institute; and
- 2.1.2 Any tertiary institutions not included in clause 2.1.1 above, must register as a participating tertiary institute by contacting the assigned person as outlined on the Competition website which can be accessed at the following address <https://graduate.standardbank.co.za/standing/Graduate/GraduateChallenges.html>. By no later than 12 March 2019.

3. HEATS

- 3.1 The Heats will take place on Saturday, 11 May 2019 from 10:00 until 14:00 at the venue provided by the Team’s tertiary institution.
- 3.2 A tertiary institution should have a venue that meets the requirements to facilitate the Heats indicated in clause 3.3 below. The assigned lecturer or tertiary institute



representative is responsible for securing a venue, and it is not Standard Bank's responsibility to secure or assist in securing a venue.

3.3 For a tertiary institution to be able to facilitate the Heats round, a venue should be equipped with the following:

3.3.1 at least 1 computer per Team;

3.3.2 language being used by the students should be set up on the computers;
and

3.3.3 an internet connection.

3.4 A Student that wants to enter the Competition, must register for the Heats round with the assigned lecturer, at their tertiary institution and must enter as a member of a team at the relevant Heat ("**Team**"). Team entries may

3.4.1 consist of minimum of one Student and a maximum of four Students; and

3.4.2 not have more than two members from a team that came first, second or third in the 2018 Technology Impact Challenge finals;

3.5 The assigned lecturer must inform the Standard Bank representative of all Teams that have registered for the Heats.

3.6 Each Team will be required to solve practical problems in applications ("**Problems**").

3.7 Any one or any combination of the following programming languages may be used:

3.7.1 Java;

3.7.2 C++11 (compiled with GCC);

3.7.3 Python 2; and

3.7.4 Python 3;

3.8 The programming versions used for judging will be communicated to the tertiary institution before the Competition starts, but will at least include Oracle Java SE 8, GCC 5.4, Python 2.7 and Python 3.5.



- 3.9 The Problem may vary in difficulty, however, as far as practicable, the Problem must be related to Artificial Intelligence and/or Machine Learning, but no knowledge about Artificial Intelligence and/or Machine Learning is needed to solve them.
- 3.10 There may be Problems to which access will only be given once another Problem has been solved.
- 3.11 The Heats will be judged by a panel of judges who will be elected by Standard Bank (“**Heat Panel**”).
- 3.12 Solutions are required to follow a specified interface, or to produce output in a particular format. These solutions will then be tested in a judged run against hidden test data compiled by the Heat Panel. By default, a judged run is deemed successful by the Heat Panel if it processes the hidden test data correctly within the time and memory constraints that will be specified in the Competition material.
- 3.13 The Heat Panel will advise if a judged run is not deemed successful. Any compiler error messages (for example, identifying where an error was detected) will also be returned if they do not compromise the integrity of the Heat Panel’s hidden test data. An unsuccessful judged run will be labelled with a phrase to indicate the reason for rejection, including for example, syntax error, run-time error, time limit exceeded or incorrect output.
- 3.14 The Heat Panel will not intentionally mislead a Team regarding the nature of their errors; neither will they guarantee to identify the true error of the programme. Normally, the first symptom of error will be noted and described by the most appropriate phrase.
- 3.15 Teams can assume that the Heat Panel’s data will be in the correct format, unless the question explicitly asks the Team to check the format.
- 3.16 Solutions must not attempt to spawn new processes or threads, open files or sockets or otherwise attempt to interfere with the evaluation process. Teams submitting solutions like that may be disqualified.
- 3.17 Teams may bring along and consult any source material intended for human use, for example:



- 3.17.1 printed (hard copy) books and manuals;
- 3.17.2 printed (hard copy) programme listings;
- 3.17.3 non-programmable calculators;
- 3.18 Teams may not:
 - 3.18.1 load any material on their contest computers in advance;
 - 3.18.2 have access to the internet during the Competition;
 - 3.18.3 bring the following into the contest area, nor may they remove it from the contest area if it was issued there:
 - 3.18.3.1 computers and programmable calculators;
 - 3.18.3.2 personal digital assistants, personal music devices, mobile phones, tablets and machine-readable media such as memory sticks and CDs; and
 - 3.18.3.3 computer peripherals.
- 3.19 All source material must be declared, and if there is any uncertainty as to whether the material is allowed, the chief judge's decision will be final. Any violation of the ruling may lead to disqualification or a time penalty at the discretion of the Heat Panel.
- 3.20 Teams will randomly be assigned to particular rooms and computing facilities. While the Heat Panel will try to minimise the effect of hardware failures, they will not be liable for any hardware failures. Teams may under no circumstances change or interfere with the computing facilities provided without prior permission from one of the judges from the Heat Panel.
- 3.21 Teams may not accept help or advice on Competition problems or rules from anyone except the Heat Panel who are authorised to give advice. The Heat Panel will also clarify any ambiguities, advise on system-related queries and explain error messages.



- 3.22 Questions to the Heat Panel must be submitted through the evaluation system, and must be phrased in such a way that they can be answered by “Yes” or “No”. Any Team that believes a question is ambiguous may ask the Heat Panel to clarify it, using the Competition software. The judge’s responses may then be viewed, using the Competition software.
- 3.23 Only solution source files submitted through the contest submission system will be accepted.
- 3.24 Standard Bank will not be liable for any solutions that are not received during the Heats – whether due to transmission delays or otherwise. Proof of transmission is not proof of receipt.
- 3.25 Teams may be asked a maximum of ten questions by the Heat Panel relating to the Problem.
- 3.26 Teams will receive sample data and sample output with each question to help clarify the required format for input and output, and should therefore be read as part of the question. It is important to note that the sample data only implies that a correct programme, given the sample data, should produce the sample output. In particular, it does not imply that the Heat Panel will use that data to test the programme, or that the sample data will necessarily check for any or all special cases that the question may require.
- 3.27 The positions of the Teams are based on the number of successful judged runs. In the case of equal numbers of successful judged runs, the position is determined by the least amount of total elapsed time for all the successful runs.
- 3.28 A time penalty of 20 minutes will be added for every unsuccessful judged run on Problems that are eventually completed successfully, with the exception of compilation errors, for which there is no penalty.
- 3.29 Scores of other Teams will be available on an electronic scoreboard. This scoreboard will not be updated during the last hour of the Heats.
- 3.30 Only the top 15 performing tertiary institutions at the Heats will progress to the Finals.



3.31 Any Team that do not solve any of the Problems correctly, will be disqualified. In the event that there are less than 15 Teams left to compete in the Finals, Standard Bank may invite additional Teams based on performance in the Heats. This decision is in the sole discretion of Standard Bank whose decision will be final and binding.

3.32 A maximum of two Team members may be replaced by substitutes following the Heats provide that the replacement Students have complied with clause 3.4 of these Rules and the Terms.

4. **FINALS**

4.1 The Finals will take place from Saturday 31st August 2019 until 2nd September 2019 in Gauteng (Finals) at the Standard Bank Global Leadership Centre in Johannesburg, Gauteng.

4.2 The Finals will take place in two phases:

4.2.1 HashBlock –

4.2.1.1 each Team will partake in this phase in their original tertiary institute Team.

4.2.1.2 up to 5 Problem questions may be asked during this phase.

4.2.1.3 from when the answers are submitted, the results of the answers will be released an hour after the judging process.

4.2.1.4 scores of other Teams will be available on an electronic scoreboard. This scoreboard will not be updated during the last hour of the HashBlock. The final scores will be announced at the prize-giving.

4.2.1.5 The judging process for the HashBlock phase will be in terms of a binary scoring system, whereby answers are either right or wrong. Points will be awarded according to first correct submission. As an example:



- 4.2.1.5.1 first correct answer: 12 points
- 4.2.1.5.2 second correct answer: 11 points
- 4.2.1.5.3 third correct answer: 10 points
- 4.2.2 IdeaChain –
 - 4.2.2.1 an unconference/brainstorming/design session will be held.
 - 4.2.2.2 Teams of up to 6 individuals will be formed by us.
 - 4.2.2.3 Teams will be required to build an application prototype using Artificial Intelligence and/or Machine Learning.
 - 4.2.2.4 Teams will be required to pitch the application to a panel of 5 judges who will be elected by Standard Bank (“**IdeaChain Panel**”).
 - 4.2.2.5 Answering and programming of questions will take place within a specified time period as defined at the Finals. Should a Team not comply with this, it will result in immediate disqualification of the Team.
 - 4.2.2.6 Teams will have up to 20 minutes to pitch their prototypes and answer questions posed by the IdeaChain Panel.
 - 4.2.2.7 Teams may use any documentation they would like, in paper form or on the Internet. Teams may also use any computer they have access to run their code.
 - 4.2.2.8 Teams are not allowed to solicit or receive support from a third party. If in the reasonable opinion of Standard Bank, any Team has



contravened this prohibition, such Team may in the sole discretion of Standard Bank be disqualified from the Competition.

4.2.2.9 The IdeaChain Panel will judge the Teams on the following criteria:

- 4.2.2.9.1 working prototype :30%
- 4.2.2.9.2 innovation/creativity:15%
- 4.2.2.9.3 applicability of technology:15%
- 4.2.2.9.4 technical awesomeness20%
- 4.2.2.9.5 Team collaboration: 10%
- 4.2.2.9.6 pitch & presentation: 10%