



Games2win - Technical Lead Test Assignment

Updated 2nd Feb 2024 - MK

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YourName_Technical Lead Assignment)**

Intellectual Property Disclaimer

Games2win values IP above all else, and we do not use work submitted for hiring purposes in our actual product/content.

If you are more comfortable signing an NDA with us, please download this draft, fill it out, sign it, and send it to us for our signatures. Then, proceed with the assignment.

1. We want to introduce multiplayer driving in our game - Driving Academy. Here are links ([Android](#) / [iTunes](#)) to download and play this game, before attempting the assignment. We would require you to think through the scope and requirements, and come back to us with :
 - Your software recommendations
 - Specific questions you may have about our existing game code, and why it's relevant
 - A technical architecture description of the new components required and how they would interplay with our existing game
 - Specific caveats or concerns that you have
 - How you would phase the development of the project
2. We have 16 games in 3 broad categories (Driving, Dress Up and Interactive Stories) that require an update a month. Games range from legacy products (5+ years old) and games first released in December 2020. Product best practices found in one game often need to be applied to others, sometimes within one family (e.g. Driving) and at times across families (e.g. new DLC systems). If you are entrusted to lead the driving-games team, what kind of best-practices would you enforce when running the team?
 - Coding standards and other best practices that you would want to enforce.
Please qualify each with a note on Why?



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- Outline a process you'd follow to ensure new modules work across games, starting from the requirements to the final integration into the n-th game. For the purpose of this discussion, assume this is for a system that allows players to convert their coins earned in one game, for use in any of our 6 driving games..
 - What tips would you suggest when refactoring legacy Unity projects ? Again, for the purpose of this discussion, coin balances would be very tightly coupled in the UI and code of some of the driving games.
3. Please download and play 'Decisions', our interactive story game. ([Android](#) / [iTunes](#)). The game comes pre-bundled with 2 stories, and the remaining 30+ stories can be downloaded in the app. Like all our games, players are from North America, Brazil, Russia and Europe. Often, players are on 3G or lower internet connections, or use older devices such as popular 5-year old Samsungs. Users complain that downloads take too long.
- Suggest some technical strategies you would try to incorporate, to allow us to deliver new stories more easily to players? (For the purpose of this discussion, lets focus only on Android) :-
- At the code-level : We use Asset Bundles and deliver story backgrounds, characters and the story flowchart, for each story.
 - At the app-level: We use Unity and build a single APK with Asset Bundles
 - At the network level : We use a popular CDN for distribution of bundles.
4. Application Not Responding is a regular challenge when it comes to Android devices. Ensuring it is below the recommend peer-group threshold is vital. Given we are a advertising-driven company and our downloads are based on organic growth, audiences who play our games are very varied. Based on your experience, suggest the following (and please be detailed ; no "I will profile the app" answers !) :-
- a. Your game is in QC and testing has completed. You have a pool of about 20 devices that the game has been subjected to. How can you ensure your game works fine (without crashes / ANRs) on a broader set of devices ?
 - b. The game is now has been tested by QC and is now ready for publishing. What steps will you take to ensure you catch problems early, as the game gets rolled out to users?



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- c. What tools have you worked with to monitor and debug ANRs other than the Google Play Store and Crashlytics ?
- d. You have a top ANR that is nativePollOnce at the top of the Stack Trace. What approach would you give your team to identify the cause.
- e. It's time for you to roll-up your sleeves. What would you do to understand root-cause, starting from scratch ?