Interviewee 1 Answers

**1. What is your current program of study/profession?**

Visual effects

**2. How much experience do you have in this field of study/work?**

20+/-

**3. Do you enjoy your studies/work? If yes, which part interests you the most? If no, what do you not like about it?**

I do enjoy it

likes working with people

sharing knowledge

doesn’t like politics

**4. What tasks or jobs would you say you mostly do in your field of study/work?**

reproducing computer graphic elements for the purposes of entertainment

**5. Can you tell me some of your likes and dislikes and what you enjoy doing?**

telling stories with images

learning aesthetics + relationships with the physical world into the digital

working in a team

**6. What are your values when it comes to your field of study?**

methodical

understanding the subject of intent

research and understanding

**7. What occupation are you aiming towards, if you are not already employed?**

Visual effect, no change.

**8. What skills have you been developing which you feel will be the most important for this future career?**

N/A

**9. What are your current goals for yourself? If you have none, do you think you will have some in the future?**

better artist

better teacher

**10. Do you prefer to use to use the hand-held calculator or computer calculator?**

computer calculator

**11. Do you have experience using the command line of your computer? And using a calculator on your computer?**

yes to both

**12. Are you comfortable enough to use a calculator without a Graphical Interface and just with the command line?**

yeah

if the help section is there (--help or man)

**13. Currently, my team and I are designing a scientific calculator and we are hoping to get your input to improve our design. How much experience do you have with a Scientific Calculator, and how often do you use one?**

I don’t use one very much

Would probably benefit from using one

Uses generic/basic calculator

sine, cos, tan make use of all the time inherently use these functions

degrees to radians conversion and vice versa

prefers black box functionality

**14. Are there any functions you feel should be included in a Scientific Calculator but aren’t?**

custom algorithm or functions (definitely this)

trig functions

matrix math -> positional and rotational into matrix + scale

multiplying matrices + matrix math

laws of energy (inertia)

temperature conversion

Planck's law to color conversion

API

quaternion

Vector to velocity

loops over dataset

array support

regex support

LUT support (Look up table) -> Support for .Cube files

remap of a value (sRGB to linear)

**15. Does your operating system provide any calculator? if yes, Do you think its functions are enough for you?**

yes and yes

**16. What function/ functions do you usually need from a Scientific Calculator most?**

addition, subtraction, multiplication, division, PI, sine cosine, rand, srt, log, Exp

**17. Do you think you will use a scientific calculator in your field of study and in your future career. If yes, what will some of your uses for it, if no, do you think you would use for personal use?**

I think so, provided this custom calculator gets built. But not the standard calculator currently available

**18. Do you use Scientific Calculator during your work or your exams or your course projects or anything else?**

Not the scientific one specifically unless need to know PI to certain decimal

**19. Our calculator will include the functions for exponential functions, arccos, log, Gamma, Mean Absolute Deviation, Standard Deviation, sinh and a special exponential function which allows variables and expressions for the base instead of natural numbers. Can you tell us which function you would find most usable for yourself? Why?**

Series of numbers, MAD

GAMMA used for pixel values but integrated into the software

**20. If no, is it because you don’t see yourself using any of the functions mentioned, or some other reason?**

For the ones I wouldn’t use, I simply don’t know them enough to use them.

**21. How familiar are you with these functions and how they work?**

Not too familiar with them

**22. Do you think it is necessary that a Scientific Calculator should take a function as input?**

yes

**23. Are there any features you would like to see included in this calculator that you think would make the design better?**

High DPI display

more visualization of any function inputted.

**24. What should the precision for a Scientific Calculator be?**

64-bit resolution

10 decimal places

**25. When using a calculator do you prefer to receive a step-by-step solution or simply a final answer?**

learning point of view, step by step

but a toggle feature when it’s not needed.

**26. Do you think a history is essential for a calculator? If yes, how big should the history be?**

yes.

10 is sufficient.

Inspect the entire history (from an instance)

**27. Do you have any positive experiences with a Scientific Calculator, if yes please elaborate?**

generally, the work well, nothing too much of note

**28. Do you have any negative experiences with a Scientific Calculator, if yes please elaborate?**

Improvements listed above would help.

**29. In your opinion, what would improve your experience when using a Scientific Calculator on a computer? What features would improve its usage for you?**

API -> not isolated.

Persona 1

Currently employed as a visual effects artist and trainer, he is always looking for ways to improve upon what is currently available in the field to make better effects. Given the broadness of his work, he is exposed to many different mathematical concepts, ranging from linear mathematics to Planck’s law.

|  |  |
| --- | --- |
| Name | Mike Raffone |
| Gender | Male |
| Age | 41 |
| Disabilities and Restrictions | None |
| Education | University level |
| Profession | +/- 20 years of experience in Visual Effect |
| Values | * Methodical approach * Understanding the subject of intent * Research and understanding |
| Goals | * Become a better artist. * Become a better teacher |
| Frustrations | * Lack of decent UI * Lack of graphical visualization * Lack of general function programmability |
| Hobbies | * Enjoys telling stories through images. * Learning aesthetics * Discovering and transforming elements of the physical world into the digital world. |
| Needs | * API support * General function input * Array support + loop support * Matrix math * Vector to velocity conversion * Lookup Table support * Quaternion functions * Planck's law conversion |
| Location of Use | * At work if all the appropriate features are implemented * At home if or when the occasion arises |
| Computer Literacy | * Excellent. * Works primarily on a computer and is quite familiar with its abilities. |
| Special Needs when using a computer | None |
| Mathematical Proficiency | * Above average. * Understands intermediate-advanced concepts pertaining to vector and matrices. * Understands concepts surrounding Planck's equation (Heat to Color conversion) |

**Summary of Interview Process**

The question method followed the funnel model, as it allowed me to familiarize myself with the interviewee and to build a better rapport. Starting off with general question helped take the edge off and allowed for a smoother interview process when it came to answering questions about the product. By getting to know the interviewee, I was able to get a better sense of whether they would find this type of product interesting, and useful in their everyday life. After going through the general questions, it seemed to have helped give the interviewee security of being able to answer truthfully without being in fear of judgement when it came time to answer the question about the product. Originally, they had stated that they may not have any useful input, however it turned out to be quite the opposite. Their answers provided useful insight into what kinds of functionalities we can adopt into our product and considerations that could be made. Given the circumstances, the interview was conducted in a semi-proximal manner, meaning over a Zoom call. Having the interviewee in view allowed me to judge how the interview process was going, whether the questions perhaps needed to be rephrased and judge the overall mood and status of the interviewee.

The interview was performed in a semi-structured manner, with many of the questions being open-ended. Although I had originally planned it to go in a more structured manner, I decided it was best to use a semi-structured method to allow the interviewee to explain their answers, that way I would be able to extract more useful information from certain questions. The open-ended questions helped in this regard as well since it allowed the interviewee to freely give their answer and explanation. Though, at times it would require a follow-up question to get to the core of the answer, this method proved to elicit more information. In the end, this method worked out quite well.

**Analysis of Responses:**

It was clear from the beginning that the interviewee had particular needs when it came to the product’s functionality. Given their field of work, many, if not all, the existing tools on the scientific calculator are integrated into the software they use. However, they did express a great interest in having the ability to construct general functions, the ability to perform matrix calculations as well as an API to integrate into existing software, to name a few. Some of the desired functionalities may be more attuned to a graphing calculator, however many of their suggestions point to clear deficiencies in currently available scientific calculators. They also stated that existing calculator lack a decent UI element, and they would therefore be happy if such an element was considered in the construction of this product. In terms of their general experience with using a scientific calculator, most of it was a positive experience, the negative portion being the lack of some of the functionalities above, however it was not enough to deter its use. To conclude, their answers were very insightful and provided many considerations to ponder on.

Interviewee 2 Answers

**1. What is your current program of study/profession?**

Software Engineering/Development.

**2. How much experience do you have in this field of study/work?**

About 4.5 years of study and 1.5 years of work experience.

**3. Do you enjoy your studies/work? If yes, which part interests you the most? If no, what do you not like about it?**

Yes I enjoy working in this field; I'm most interested in developing software interfaces (front-end development).

**4. What tasks or jobs would you say you mostly do in your field of study/work?**

Currently for work, I'm developing new front-end features and refactoring the current UI framework for an app from AngularJS to Angular (woot woot).

**5. Can you tell me some of your likes and dislikes and what you enjoy doing?**

Related to work I'm guessing? –

Likes: Applying/learning new things working on new features, working on documentation, collaborating with other devs on design/implementation, applying GIFs in conversation;

Dislikes: Developing for Internet Explorer.

Everyday life if not –

Likes: reading, Pokemon GO, sunbathing, more lame stuff

Dislikes: Cleaning the toilet.

**6. What are your values when it comes to your field of study?**

Continuous learning and improvement, as well as enjoying what you do and being proud of the work you put out.

**7. What occupation are you aiming towards, if you are not already employed?**

I suppose I am already there - working as a Front-end Developer.

**8. What skills have you been developing which you feel will be the most important for this future career?**

I'll mention the skills I've picked up that were pretty important - accountability, organization, communicating and working with teammates, being motivated to try and fail and learn on the job, and obviously developing the technical skills needed for the job.

**9. What are your current goals for yourself? If you have none, do you think you will have some in the future?**

Currently, I want to become more proficient in the new Angular framework that we're using at work. And yea, I'll probably have more goals later.

**10. Do you prefer to use to use the hand-held calculator or computer calculator?**

Hand-held.

**11. Do you have experience using the command line of your computer? And using a calculator on your computer?**

Sure I have some experience with the command line, although I'm one of those that prefers using a pretty interface instead. And I know how to use the computer calculator app of course...

**12. Are you comfortable enough to use a calculator without a Graphical Interface and just with the command line?**

No idea, never tried such. I'm sure I could. But I would prefer a GI

**13. Currently, my team and I are designing a scientific calculator and we are hoping to get your input to improve our design. How much experience do you have with a Scientific Calculator, and how often do you use one?**

I haven't used a calculator for scientific purposes since graduating 1.5 years ago. I HAD experience; I no longer have much experience with one now, since I never need to use one for work.

**14. Are there any functions you feel should be included in a Scientific Calculator but aren’t?**

I've forgotten what's already included in a scientific calculator... I guess calculus-related functions (derivatives, integrals, Lagrange, Laplace transform, combinations), engineering related functions (mechanical motion/transfer functions, electrical relationship functions)

**15. Does your operating system provide any calculator? if yes, Do you think its functions are enough for you?**

Yea Windows has a very basic calculator - its enough for me now, but as a student in Software Engineering, it definitely wouldn't be enough.

**16. What function/ functions do you usually need from a Scientific Calculator most?**

Now? BEDMAS functionality. Before? All the stuff in #14.

**17. Do you think you will use a scientific calculator in your field of study and in your future career. If yes, what will some of your uses for it, if no, do you think you would use for personal use?**

Nope, I don't anticipate I'll need it for the work I'm doing or will likely be doing from now on. I'd be using the very basics of the calculator for personal use.

**18. Do you use Scientific Calculator during your work or your exams or your course projects or anything else?**

Work, no. During school, heck yes. Those brutal engineering exams...

**19. Our calculator will include the functions for exponential functions, arccos, log, Gamma, Mean Absolute Deviation, Standard Deviation, sinh and a special exponential function which allows variables and expressions for the base instead of natural numbers. Can you tell us which function you would find most usable for yourself? Why?**

Nice. Definitely during school I would've used exponential and log functions, those were in a lot of courses.

**20. If no, is it because you don’t see yourself using any of the functions mentioned, or some other reason?**

I will not be using any of these now, I don't need to for work.

**21. How familiar are you with these functions and how they work?**

Pretty familiar. Again, I've been out of school for a while, but I would get it with a little refresher.

**22. Do you think it is necessary that a Scientific Calculator should take a function as input?**

It would be pretty useful to define a frequently used function that you can use to plug-and-play variables.

**23. Are there any features you would like to see included in this calculator that you think would make the design better?**

^ Custom functions as mentioned. Depending on your area of study/work, there is likely a list of frequently used functions that would save time in the field if they were defined and saved in your calculator where you can just input your variables.

**24. What should the precision for a Scientific Calculator be?**

your calculator should always be as precise as possible

**25. When using a calculator do you prefer to receive a step by step solution or simply a final answer?**

Ooooh... I would definitely prefer a step-by-step solution if you're using the calculator to learn/study. But simply for application on the job or during an exam, the final answer is best. I would not complain if my calculator could toggle between both of these functionalities.

**26. Do you think a history is essential for a calculator? If yes, how big should the history be?**

Yes, especially when you need to split your problem/calculations into parts. As for how long, I don't know... 10. 10 histories long...

**27. Do you have any positive experiences with a Scientific Calculator, if yes please elaborate?**

Yes. It helped me pass my exams. (Really not sure how I could have a worth-while experience with a calculator)

**28. Do you have any negative experiences with a Scientific Calculator, if yes please elaborate?**

Yes. One time, my calculator was not in my backpack when I needed it. I'm just kidding, you don't need to use this, just write 'No'

**29. In your opinion, what would improve your experience when using a Scientific Calculator on a computer? What features would improve its usage for you?**

I would definitely appreciate a good-lookin' interface for the calculator

If I were still in school, I would benefit from custom functions (#23) and/or functions tailored to engineering applications (#14). Step-by-step solutions (#25) would also be a neat feature to use as a student.

Persona 2

Currently employed as a front-end software developer, with a degree in software engineering, she has been exposed to various mathematical concepts that pertain to her field. Although she does not use advanced mathematical computations in her current work, she states that a large part of obtaining her degree involved learning about these various mathematical concepts.

|  |  |
| --- | --- |
| Name | Robin Banks |
| Gender | Female |
| Age | 29 |
| Disabilities and Restrictions | None |
| Education | University Level |
| Profession | 1.5 Years of Software Engineering |
| Values | * Continuous learning and improvement * Enjoying what you do * Being proud of the work you put out |
| Goals | * Become more proficient with the new Angular framework |
| Frustrations | None |
| Hobbies | * Applying/learning new things while working on new features * Working on documentation * Collaborating with other developers on design and implementation * Applying GIFs in conversations * Reading * Pokémon GO |
| Needs | * Calculus related functions (derivatives, integrals, Lagrange, Laplace transform, combinations) * Engineering related functions (mechanical motion/transfer functions, electrical relationship functions) * General functions (with memory functionality) |
| Location of Use | * School * Home |
| Computer Literacy | * Excellent * Works solely on a computer and is quite familiar with its abilities. |
| Special Needs when using a computer | None |
| Mathematical Proficiency | * Above average * Familiar with mathematical concepts taught in university engineering courses |

**Summary of Interview Process**

This interview followed the funnel method, for the same reasons listed above. However, as I was already quite familiar with the interviewee, there was no need to ‘break the ice’ so to speak. In this case the general questions were more for building their persona than it was to familiarize myself with them. Due to scheduling issues on both ends, we decided it would be best to do the interview in a non-proximal manner. This allowed the interview process to be more convenient and to a certain extent, more efficient, as I was able to ask multiple questions at once and receive (and conveniently ‘record’) multiple answers at once. The negative factor to this being that I could not judge the interviewees expressions or mood through the wall of texts, and therefore could not get a better sense of the interview process. Many of the answers that the interviewee gave pertained more towards their years in university and what would have been applicable then rather than now. The reason for this (as they stated) is because they do not have a need for computing scientific functions on a calculator in their profession. However, their answers did provide quite a bit of insight.

This interview was conducted in a semi-structured manner from the beginning, as I took a liking to this method during the first interview. To the same effect, it proceeded much like the previous interview, therefore there is not anything more noteworthy to mention.

**Analysis of Responses:**

Given that the interviewee mentioned that the currently did not have a need for a scientific calculator, they still provided useful insight into the needs of an engineering student. Some key features that the mentioned were the ability to input custom functions, the addition of calculus related functions, and the addition of engineering-based functions. Coupling the response with the previous (Persona 1) interviewee, it seems as though there is a need for custom function implementation within the scientific calculator. The interviewee also expressed a preference for a UI based calculator, as it is more convenient to use; again, this response is common between the two interviewees. Many of this interviewee’s answers coincided with that of the previous interviewees, which may seem as though there was no information gain, however it only proved that there is a demand for these types of features across different fields. This interview helped reinforce some of the functions under consideration, and thus provided quite a bit of useful insight.