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Vacation Work Intro

Firstly….

A big welcome to all of YOU to Psybergate!!! (lets turn video for a few minutes)

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In general….

- Please take notes where necessary

- Do further reading on anything we discuss

- Don't be shy - ask all the "idiotic" questions you want – most people don't get to the good questions until they ask a lot of the "dumb" questions – the more senior/experienced you get, the harder it becomes to ask the "dumb" questions

- All material is **Psybergate IP**, and as such, the material is only for your consumption – please do NOT share it with anyone or use it in any commercial context

- This is going to be challenging … - so please put in **all the effort** you can – this is intended to **really change a lot of your thinking and make you a better programmer**

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Treat this as Work

- Put in full 8 hours (at least)

- Don't mess around

- Don't answer cellphone or text whilst are in meetings

- Use this as an opportunity to see how Work feels

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Intro to Psybergate (1)

- Who has heard of Psybergate before?

- Started in 1999 (www.psybergate.co.za)

- Approx 110-115 people currently (2022)

- Offices in JHB

- Our focus is "people" and "software development solutions" – technology focus is Java/JEE/Spring/Open Source/Full Stack

- Strong use of Open Source / Agile

- Member of the JCSE - www.jcse.org.za

- We were also responsible for bringing SpringSource to SA in 2009/2010

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Intro to Psybergate (2)

- Clients currently mainly in the Financial, but some in Health / Education / Public Sector / Other

- Mentoring/Learning is a big part of our thinking (internal, external, junior) – particular in the context of the challenges SA faces

- We are not a training company – a lot of what we do in our mentoring is driven by our own development experiences

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My background … (1)

- Been in IT since 1988

- Been in Java since 1999 (since starting Psybergate)

- Come from a decent academic background and always been an enthusiastic student (my whole career)

- Many roles at Psybergate (developer, sales, owner, manager, entrepreneur, …)

- Try to work hard at my fundamental understanding and I have strong learning culture

- Have a strong passion for development and problem solving (e.g. www.projecteuler.net)

- Firm believer that thinking (like sport and most things) requires a lot of practice

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My background … (2)

- Been particularly concerned about the skill development challenges in SA, which is one of the reasons why we have been doing a lot more fundamental mentoring

- Started experimenting with Mentoring of devs (mainly Senior) as far back as 2008

- Very concerned that many devs lack strong understanding of principles / concepts – most are just learning technologies / tools, and even there, this is being poorly done.

- Many of this stems from our poor educational system

- I often see my own children as examples of what can be achieved with good guidance / mentoring – and like most parents I think I have done a good job ☺

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Introductions of the Vac Students

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Goals of Psybergate (1)

- Increasingly focused on becoming a strong learning company focusing on the development of younger developers (under 8-12 years of experience)

- We feel that 80% of our skills must be approx. 6-9 years and under

- We want employees that are partners in our business, strongly interested in learning and reaching their potential

- We want seniors who are interested in more than just themselves – wanting to playing a broader role in better systems thinking and the development of younger developers – seniors who want to be good role models both professionally and personally

- We want our employees to gain broad and deep experience – both good and difficult experiences

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Goals of Psybergate (2)

- We want employees to attach to a bigger purpose and goal in life – most people are unfortunately just chasing money

- We want employees who are seeing ways to grow both Psybergate and the Psybergate community – we believe we have the potential to be a special company, but our employees have to take ownership

- We want a strong culture of pride !!, collaboration, communication, professionalism, humbleness, respect, courage, integrity, growth and learning and excellence – we believe that a lot of this is lacking in South Africa

- We want our employees to feel they can discuss ANYTHING with us and with each other – this is the culture we want to create

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Goals of Psybergate (3)

- We want to increasingly contribute to job creation in SA
  - Since 2013, we have now taken on over 125 Grads !!
  - We are looking at ways of increasing our job creation of young developers
  - We want you to be part of that journey
- We want to be a World Class Software Dev company!!

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Goals of the Vac Work

- For you to have lots of fun

- To stimulate / challenge you

- Hopefully if you are beginning to question "do I want to be a developer as a career", perhaps this vac work will shed more light on that for you

- To give you a bit more insight to core software / programming concepts – many students and industry devs don't really know how poor their formal thinking is around software concepts / programming – this industry throws you into the deep end and many devs NEVER recover

- Good foundations lead to good higher order thinking !!! – This is important to being a good senior

- We will try and get you to demonstrate everything (or as much as possible) in code

- Improve your productivity – try and take the thinking we try to grow in this mentoring to all aspects of your career / life e.g. grow stronger understanding of your tools like your IDE

- Get you to ask Why a lot more – this is the basis of lots of understanding

- Give you some insight into the industry and the demands / challenges you may face in the industry

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Goals (contd…)

- One of my biggest goals (as Psybergate) is to give you more insight into:
  - Our culture
  - The vision we are trying to create
  - What we are currently doing
  - Make you more aware of our brand
    - I encourage you to interact as much as possible with our current grads
  - Make you aware of our challenges (things are not perfect) e.g. 2-10 year plan

- **<u>And lastly, get you to feel like Psybergate is the place where you want to work after you graduate</u>**

- We would like you to tell your friends / colleagues about Psybergate

- I will ask you to fill in a feedback form at the end of this vac work

- We MAY even do a catchup session (1-2 hours) with you sometime in the next few months

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Any questions so far ??

What does it mean to be a Professional Developer?

- Firstly, and most importantly, this means you are being **_PAID_** – that is what professionalism means

- Technical skills are important

- Delivery is important

- Communication is important

- People / teams skills are important

- Client/Employer service is top of mind

- …

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Challenges During Vac Work

- There is a lot that we have to get through

- You need to make sure you are putting in all the effort to get the best out of this opportunity

- Virtual / remote mentoring is not ideal – but I believe it is workable – we have a fairly large group as well – I ask you to be a little patient at times

- You have to be very independent and take initiative – Chris / Gena / and Team will not be molly-coddling you

- We may have people at different levels so you need to be aware of this and be sensitive to this

- Some of the students do not know Java either

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Structure

- Start 08h30 – 17h00

- Lunch will NOT be at a set time – but we will target 12h30 – 13h00

- I will spend a fair amount of time with you in the first week or so

- Gena and some of current Grads will also spend time with you

- We will split you into Groups so that you can help each other and interact with each other more effectively

- Each Group will have a self-nominated leader

- If necessary, feel free to put in additional time

- If you having problems at all – please let Dudu know (duduzile@psybergate.co.za) and copy Suhail (suhail@psybergate.co.za)

- **Please treat your Data responsibly !!!!**

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Groups

- See Group spreadsheet (Gena will sort out)

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Course Contents

- This whole course only deals with core Java, basic OO, basic testing, basic DB concepts, basic JEE (possibly – probably not)

- Many of our discussions will involve concepts that go beyond Java and involve software as a whole

- We will be building and evolving a Tax Calculator – so you will learn a little bit about Tax as well – which will be very useful in your life going forward

- Don't stress – because you will feel very lost a times – just have fun, consult with your peers if necessary, consult with Gena and some of my Grads, and stay strongly committed

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Software required...

- Java 8

- IntelliJ 2022+ (at least)

- Postgres 13+ (with PgAdmin)

- Build - Ant or Maven (probably Ant)

- All of this software will be provided for you

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Why Java?

- Well, firstly, we are Java company, and so we hire Java developers ☺
- When we started in 1999, Java was the "cool tech" – we really just got lucky that it grew to the level of technical dominance it has
- Java is the most dominant technology in SA and the world
- There is huge demand for Java devs (both locally and internationally)
- Given the skills shortage in SA, I sense the local demand is even higher than the international demand
- Almost all of our big companies use Java as their core tech – and they are continuously struggling to find decent Java devs
- Do some of your own surfing
- See the **Tiobe Index** for worldwide program language trends

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48 year Career diagram

Lets turn it up just a little - Some basic Maths fun

- Is 286 * 678 = 218568 correct? 218546??

- Is 74452.23 * 0.0956452 = 739.12676236 (approximately)

- Squaring a number ending in 5

- Is there a largest prime?

- What is $1001^2 - 999^2$?

- Show algebraic formula for multiplying 2 2 digit nums (ab and cd) – show how this ties into long multiplication taught at school

- Spot the pattern:
    - 1 = 1
    - 1 + 3 = 4
    - 1 + 3 + 5 = 9
    - 1 + 3 + 5 + 7 = 16
    - 1 + 3 + 5 + 7 + 9 = 25
    - So, given x^2, can you find $(x + 1)^2$

- Write 329 in binary

- What is FFFF as an integer? (you can write it in powers of 2 if that is easier)

- What is 7FFF as an integer? (you can write it in powers of 2 if that is easier)

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Questions…??