



FR. CONCEICAO RODRIGUES COLLEGE OF ENGINEERING
BANDSTAND, BANDRA WEST



FINDING **IKIGAI**

EPISODE 3
DESTINATION :
SELF ACTUALIZATION

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English Literature



The Prison Break

You need a purpose to stay, yet you want to run out the back door
Leave this mighty hell, but heaven gets on your nerves.

The Ikigai you trying to find ,resides in deep pits of your mind
Running through the glassy floor, in the end you need to face your
demons,

Because every morning you wake up,
The mirror's reflection is gonna ask you questions.
By then how long are you going to run?
How far can you run from yourself?
How long can you turn the mirrors around?

You yourself have to keep your demons in chains,
You know they love control.
You are the one who don't have to let the strings loose,
You know beautiful things can be messed up.
Your Ikigai is what you have to know.

***-Yayati Nakhate
(FE D Mechanical)***

Picture Abhi baaki Hai Mere Dost

Live, because "Picture abhi baaki hai mere dost".
You know what? Live.

Live because there are so many places waiting ,
To be in your box of memories
You hide under your pile of clothes.

Live because you are the one thing,
That's missing from the sky
When the world talks about moon-less nights.

Live because your mother talks about you
And her eyes look like undiscovered oysters,
With hazel pearls sitting right inside them.

Live because your father remembers the day
You wrapped your entire hand around his finger,
As if it happened just the previous day.

Live because you were born to speak,
The language of turning a house into a home,
And not of loitering at the edges of unfamiliar graveyards.



Live because there are so many bizzare dreams
You still haven't seen,
Only to be woken up in the middle of the night.

Live because your brother
Still hasn't told your parents,
About the girl he really wants to marry.

Live because there are so many cocoons,
That have not turned into butterflies just yet.

Live because the light at the end of tunnels
That people keep talking about,
Is waiting for you.

Live because there are
so many new books you haven't smelled yet,
so many poems you haven't written yet,
so many stories you haven't weaved yet.

Live because there are so many lives
you have saved till today, except your own.

Live, because "Picture abhi baaki hai mere dost".

-RICHA TRIPATHI
(TE ELEX)



We Were Born Sick

They tell us not to break,
Label our minds too fragile.
Even when we are awake,
We try to hide.
Behind the windows which have been
shattered to pieces
Under the tables collected with dust,
Just for peace of mind, the willow grows
But it traps tighter, as we let in the sunlight.
But we let them crawl in our veins.
We let them run through our system.

***-Yayati Nakhate
(FE D Mechanical)***

Confusion

Sometimes,
You're confused.
Confused of what's happening around
Confused of what's happening inside you;
You don't know what it is,
You just know it is;
Thriving on the throne of mind,
Gripping your senses,
Changing your dreams;
Tossing you on the seas of thoughts
Thoughts that chill you numb,
You don't know what it is.
But, you're not scared.
You know you're stronger
Stronger than what creeps you dead.
You are just confused
Confused of exactly what to fear,
Whom to fear;
Yet you don't give up.
You keep fighting,
Fighting against an enemy unknown;
Or probably an enemy so well known:
Confusion.

***-Mohit Pansare
FE***

Rains

Rains are like postmen-
Carrying letters from far and wide;
Letters of memories and pains
From deserts of your heart
To the beautiful shores of your eyes.
You stare at the falling rain for just a moment,
And boom!

A cloud burst, is what your eyes play
Pouring on you, days of good and bad;
Showing you scenes on the blur screen of tears.
You cry and smile at the very same time;
Cry, for you miss those days,
Smile, for you lived those days.

What beauty oh lord!
And finally the movie ends.
You're back in your room,
Staring at the drops on the leaves.

You wipe your eyes,
You smile from the heart.

And thank the rain;
For its beautiful show.

-Mohit Pansare
FE

Pink And Blue

I look up at the starry night
As it gets colder, I close my eyes
I see a canvas, seems like pinks and blues of my life
Ups and downs, worst and best, all moments that
complete me, conclude me, are drawn on it.
Not longing for it desperately,
But somewhere in between this fast life,
I wish to breathe slower and find my serendipity.
For now, we are mystery to one another
But I know,
For you and me, Everything has been planned.
Trust this universe and let it find you and me.

***-Shamita Shetty
(T.E. Electronics)***



SMILE

Smile, in darkness brings SUNSHINE,
It seems that things are fine.
It makes the wrinkles go
And it makes one's face glow.

Smile is infectious
You catch it like a disease.
When someone smiled at me today
I smiled back with ease.

As I walked along the road
And people saw my grin,
When they smiled back I realized
I had passed this disease to them.

Smile kit was created by God just for you.
It's filled with love and fun things too.
SMILE doesn't cost a penny
But, HAPPY it makes many.

-Brenda Fernandes
SE MECH

RISE AGAIN

A labyrinth around me, I perceive,
An encircling failure do I receive,
A miasma of frustration is what I breathe;
This was not for what I sowed my seed.

An escape from the path is opposed by a task;
A hiatus for catharsis is all I ask,
'No', comes the reply by the challenge in a mask,
When will there be sun again, for us to bask?

Oppression to the hilt might make you sink,
Here is the transformational rink:
Stronger will you rise and will you shine;
Sooner than you realize, it will all be fine.

'How long will these troubles last?', has no reply,
Be confident and determined, don't give up to try;
Through consistency will you become a connoisseur,
Strive through the journey, success is what it will
assure!

***-Nisha Nitin Mascarenhas
TE Computers***

HARK HUMANS....!!!

It's high time for us to realize what we are doing to our Mother Earth.
She has given us a place to live, food to eat, and what not....but are we worth??

It is said that "Human is the Best creation of Mother Earth",
But the reality seems that "Human is the real threat to life on Earth",
Who don't even think about any other creation's birth

During Covid-19 situation all else is HAPPY,
Animals, birds, nature, only Humans are unhappy.
Our mother earth has apprised us many times,
Through various signs to stop all the crimes.
Tsunamis, earthquakes, and increase in temperature every year,
She warned us not to spoil her beauty, crisp and clear.

We worsened the situation of nature, and in return got these times of Covid-19,
Wherein our Mother Earth is healing, by making the rivers clean.
Air is being purified, the layer of Ozone is in cure,
The crime rate has dipped, the changes are pleasant for sure.
Now we have the opportunity to utilize the chance given by her
To maintain and escalate the beauty of the nature
We think, we have created the universe,
and it cannot function without us.
But the truth is, now that humans are under quarantine,
The universe is functioning as per it's routine.

If we don't perceive our omission and continue with action,
The consequences of the next epidemic will be beyond our imagination.
If we don't halt and carry on with our faults,
The next generation has to bear horrendous results.
For the survival of the progenitor, we have to pledge,
To save our Mother Earth every minute, every second, till our last breath.

- Gautami Silivery
(SE MECH)

Freedom <from quarantine>

One year has elapsed now,
Life before that is still a precious memory.
Just one dream reminds us, just wow
Last life was an never ending battery.

The roads filled with chaos now,
With no guarantee of returning home safe.
The old faith is lost now
It's Work from home or half leg in a grave.

Factories workshops clinging tight,
To any wrong news the gov might
Their Families that require to be fed
Need the workers to get their hands red.

Everyone needs one rope to hold on to ,
A final dose is all they need.
Who's to blame for the infinite losses
Is it politicians with infinite greed ?

We do not expect for the losses to be repaid,
We do not mind the problems to be shared,
We won't hesitate to protect ones we cared,
All we need is to make us all free.

***-Yashas Joglekar
(SE MECH)***



Bittersweet Dreams

Dreams happen to just visit one day,
Clear up all your schedule and make you Blindfolded for
rest of the day

Sometimes that happening turns happening,
Most of the times it becomes mishappening
Maybe they have a reason to

Maybe they don't,
Sure as hell they come.
And things happen which never won't,
Some Dreams remain just a dream.
Before reality strikes taking away the cream,
When it strikes it does shatter everything.

But until it doesn't there's a dream lived on,
These type of dreams which are hated,
These ones that always wakes us up ,
Maybe someone you mistreated
Or maybe someone just shut you up.

***-Yashas Joglekar
(SE MECH)***



Wanting To Be Set Free

'Mukti Bhavan' or 'Salvation House', is a guest house that caters for people who wish to come to Varanasi to die. Moksha, mukti or salvation is liberation from the cycle of life and death. Guests can normally stay up to two weeks after which, if they haven't yet passed away, they are gently asked to leave. During their stay of two weeks, the guests ponder about their life choices, their mistakes and the people they've hurt. They try to correct those wrongs on their deathbeds in the pursuit of peace. It is believed that moksha cannot be attained with the burden of lies and guilt.

"A storm of regret, a storm of guilt, like a burden on my chest, A pain so deep, impossible to digest"

This idea of forgiveness, although based on the myths of life, death and salvation, stands true even when facts are considered. Peace of mind is no different from peace of soul. A bad is committed, realization happens, forgiveness is asked and redemption is attained. A mind aware of the host's mistakes can never forget it. Once a mistake is realised and accepted, there's a continuous nagging voice in the subconscious mind asking to correct it.

"The gloomy depths are pulling me down, it's an enigma,
I don't understand still, whether it's gravity or just karma"

It's when you face a bad turn, these events flood to your conscious making you think it's karma. Then people start to overthink, they slide into depression, they blame their luck not realizing the real devil is the human mind. What is the use of that ego if you cannot live your life with a peaceful mind and healthy relations? Why would you rather accept a life full of nagging subconscious voices instead of healing the injuries of the hurt and the mind of the person who hurts?

"The darkness is eating me whole, shredding me bit by bit.
In some twisted way, I know the crimes I commit
And so far, I did nothing, I don't know how to better,
You know how I feel? I don't know either."

Forgiveness is above all classes, ages, genders, races, religions and qualifications. Own your mistakes. No man becomes small for saying "I'm sorry" or "It's ok". A mistake cannot be undone with two simple words, unless you deeply mean it, and take an effort to correct it in future. But forgiveness is the step which not only unburdens you mentally, but also relieves the receiver of your wrongdoings. Forgiveness is best served fresh, but it's never too late to mend your mind and save relations.

Life after death is unknown, and maybe it is only in this life where we all get the freedom of choice. So let's make better choices until we can. And one day when you're sitting on your deathbed recollecting your life long uncorrected mistakes, I hope your list is empty.

"A million pieces of me, wanting to be set free"

-Swarangi R. Kale
(SE Mechanical)

RELIGION : HISTORY AND NATIONAL IMPACT

'Religion, a topic that big scholars and literary writers are to this day dumbfounded by its vastness, cruelty, bias agendas and many other fields where religion is preferred. To delve into this topic we must look into the history of religion and how it came to being. What really made the common man want to believe in something? More so, why was it necessary to believe in something? The answer is always in the QUESTIONS. Questions have always driven our society and our technology to countless bounds. Questions are why we mankind has progressed thus far and will continue to go on. It brings forth an idea from a simple notion or a thought or rather a question. So back to religion. What made it happen? What made the ruckus or blessing of mankind some may say? What made the wars and peace our many forefathers left us.?

Simply put it came forth by asking questions about our own existence. Who made us? Were we ever made or are we just an illusion or a dream? Are there others like us? Such were the notions of famous Greek thinkers and critics of literature from all around the world. And this gave birth to the concept of religion. The history of religion refers to the written record of human feelings, thoughts and ideas. The period of religious history begins with the invention of writing. This led to the discovery of the bible which most ancient forefathers believed to be the truth. Then along came Catholicism with its roots leading to the great elders and priests of the church. Later a group of rebels protested against the church and its ways of blinding the illiterate people into believing the unseen. These rebels under the influence of Martin Luther king protested and started their own church. Thus giving way to protestants and many other sects under the name of Christianity.

This just being one aspect of religion, the Greek mythology is also believed by many to be a religion of some sorts. The Hindu religion also passed down from the mythology of various novels and dramas namely from the poet Valmiki and other Indian scholars and writers. This passed down to generations giving birth to the strong foundation of Hinduism and its roots. Now these various religions have had an impact on society. Not only that but people have also tried to promote their religious beliefs on society not only in subtle but at times using harmful and harsh mannerisms. This has led to a sort of imbalance in society.

Take India for Example. India has a majority of Hindu population. Which means Christianity, Islam, Jainism, Sikhism and others come under the minority. Religion supremacy or bias over religion is a problem that undeniably prevails in our country. One example of religion dominance is the beef ban imposed on certain states in India. The cow being a sacred animal in the Hindu religion hence the imposed law. This shouldn't be imposed on all citizens as this is an acting religion of dominance. Conversions of religions are also predominant in some rural areas where the people are not aware of their indulgence in other faiths. Here is also an example in the matter. Religion throughout history has been a topic for conflict of internationally and nationally even. Conflicts between different sects of the same religion even occur in plenty, although not harmful. But a sort of cold war between them and peaceful hatred exists. Shia and Sunni are two major denominations of islam that have been at constant war with each other since 1979. An ample amount of bloodshed occurred between the two in the name of religious beliefs and hatred and anger.

So is this the future of religion? Well in my opinion the conflict between religions will always exist. There always will be an unspoken war between them. Religion was created for humans by humans and the ruin of humanity by religion will always be at the hands of mankind. It is a war of opinions, beliefs and faith, and it is a very strong fight to win. However, some may say maturity and education or literacy may curb it. This is however not always satisfying.

-Rachael Dhalwani
SE MECH

Health, the Real Wealth

Health is one of the most important part of our life. Year 2020 taught us to change how our life was, and how we must try to turn it into a healthier one. The sudden outbreak of pandemic made us realize that among all the priorities, health comes at number one. With being unwell no one can get what they want.

This summer, the joy which I really want is to be healthy, because it is one of the most vital parts, to pursue whatever I wish in my life. Happiness is not just about how to follow our dreams but to also follow it by being stress-free, by being relaxed, which is only possible if we are robust. Daily exercising and practicing yoga are the first steps towards keeping life physically fit and mentally healthy. One can only help others if they are able to help themselves. Asocial Ikigai (self-discipline) can help to achieve necessary fitness which I want. Self-discipline is a necessity in today's life. If we take care of ourselves now, we can avoid unrequited health problems in future.

Struggles and hardships will be there for each and every task we do, whatever passion we have, whatever dreams we wish to pursue. But if we are physically and emotionally fit, we can achieve everything we want. Without taking care of ourselves first, we can never actually be useful to anyone, not even to ourselves.

-Khushi Parikh
BE Electronics

Ikigai : The Japanese Way Of Viewing Life

Quotes about life are beautiful aren't they? According to some, life is a book. Others equate it to some ship sailing in sea. For few individuals it's a dream or a bi-cycle ride.

While for engineering students it is simply exchanging of oxygen till your cells wear out.

Well, that was my futile attempt at making the reader laugh.

There is no dearth of comparisons between life and other tangible or intangible elements of the universe. To thoroughly enjoy this book or ship,(whatever suits you) of life. there is definitely a significant vacancy in methods that an average mortal should resort. Obviously self help books and youtube videos do exist, but unfortunately, most of them haven't been revolutionary enough to make an ever lasting impact on the human race. However no universal truth is immune to exceptions and there is an old japanese concept that falsifies the former sentence. The concept is "Ikigai".

"Ikigai" is a japanese compound word consisting of two elements ie "iki" which means life and "gai" that roughly translates into reason or a definite purpose. Hence this traditional japanese concept, could be defined as the purpose of a human to live, and at the same time, be self motivated and continuously striving for attaining your goal or passion. In true sense it's an "Umbrella Term" for any activity or goal that would be instrumental in imparting a sense and direction to one's life. It is extremely important to stress on the word umbrella term. Ikigai is not a scientific theory which can be explained in universal terms or mathematical expression. Ikigai cannot be represented in the form of a venn diagram or a graph. It is an idea which compels the concerned human into taking decisions that will give him/her self-satisfaction. Interestingly, that self-satisfaction can be achieved in anything. Probably in a career, relations, some society related goal or even monetary achievements.

To put it simply it's choosing the one in 14,00,000 possibilities that will help you achieve your goal and whatever you choose is in your hands, and not in that of an imaginary concept like faith or destiny. The one special trait that makes Ikigai peculiar from other concepts is that it can not be taught or forced upon someone else. It's spontaneous and an intrinsic process and often validates an old english proverb , "You can take a horse to the pond but you can't make it drink water". It is often said that the road for revolution is paved from the inside. No motivational speaker, life guru or any saint can help you find your ikigai and that's what might make ikigai difficult for some to comprehend. The road to ikigai is certainly not smooth, after all it is dealing with your life.

Although the fruits that you achieve are worth the hardships one has endured through the bumpy road. This makes ikigai one of the most celebrated ways of living. Ikigai is not just about taking decisions or following a certain goal . It also focuses on living a healthy lifestyle ,being optimistic , the importance of forgiveness and inculcating several other good habits in one's daily routine, that will contribute to your well being . It teaches one to not ruminate over the past or dream about the uncertain future . Rather concentrate and enjoy the moments of the present and basically "go with the flow"

Since Ikigai is peculiar to a person, it also differs with society, cultural values and time. The concept of Ikigai for individuals from the older generation in japan would often be concerned with fitting in the society, as most oriental and asian cultures Japan was a collectivistic nation. The concepts of modern generation like career centric ikigai though don't quite resonate with the previous generation.This proves the uniqueness of Ikigai, which shouldn't be feared rather it should be embraced with open arms.

Another alarming fact about "Ikigai" is that studies have proven "Ikigai" might be one of the reasons behind the longevity of people in Japan. This fact is indeed rational enough, since Ikigai fundamentally concentrates on positive thoughts and the world is no stranger to the benefits optimism brings along with it, both psychological and physical.

Neurological analysis carried out on several individuals has linked increased frontal lobe activity in people who have adopted this ancient lifestyle. The methodology of self awareness and striving to attain satisfaction causes the release of Dopamine one of the few "happy hormones" by the human brain which puts people with anxiety issues at ease. This is a major advantage for people living a highly competitive and strenuous lifestyle. In today's society where anxiety and stress have become a part of daily life, adopting a lifestyle which promises to cure these psychological evils without any medical intervention is indeed a blessing to humankind.

Any average working human wait for retirement or any student need or completion of academics for enjoying life and presence of loved ones if he/she takes this conscious step towards ikigai. In fact people in Japan who adopted Ikigai refused to retire or sit idle and continued working willingly and happily. Thus successfully proving its credibility in reforming work places. The benefits of Ikigai extend their influence in the cardiovascular domain. For a person with less stress levels, reduced anxiety and optimism along with a necessary healthy diet, certainly bears a well functioning heart.

Most importantly ikigai not only affects those seeking better health, it has proven to aid students in academics and people in their daily jobs. A person obtains a sense of self authorship that reduces your dependency for an approval on others and boosts your confidence. The most important of all Ikigai has the ability to make people go through or survive through hard circumstances and keep a constant faith that things would change for good. It comes as no surprise that this concept has provided enough strength to the Japanese, for facing one the most adverse conditions anyone could ever imagine. To name a few are the Hiroshima and Nagasaki bombings and the innumerable earthquakes the country has endured till now.

One can say without any doubt that Ikigai certainly might have played at least some sort of role in shaping the technologically advanced and resilient Japan that we see today. Hence we can very distinctively come across the massive potential that this ancient Japanese secret holds in shaping every walk of life. While an average human might hear numerous definitions of life, Ikigai makes you understand the definition of a happy one.

- Rhea Bhalekar
F.E -D

TECHNICAL LITERATURE



Secure And Accessible Transactions For All: An Exigent Necessity

As the world is evolving and so are the technologies with it. This has proven to be a boon for mankind but due to ease of access to humans worldwide through the Internet, various cyber-crimes related to bank money transactions, property, ransomware, and many other kinds of cyber threats are being experienced by innocents across the globe. In 2015, the Digital India campaign was launched by the Government of India to ensure the Government's services are made available to citizens electronically by improved online infrastructure and by increasing Internet connectivity or making the country digitally empowered in the field of technology. Since then, the entire population of a billion is now moving from all-cash transactions to digital transactions. We are now well versed with the digital payment scenarios thanks to companies like Paytm, Amazon Pay, PhonePay, Google Pay, and many others.

Criminals and fraudsters have also upgraded their crimes from pick-pocketing to cyber fraud. Although advancement in technology has marginally helped people to enjoy and utilize the advantages of cashless/digital payment systems. But with technology, vulnerabilities also come along. Cyber fraud is being experienced by the innocents in which physically abled ones try to manage the worst scenarios but the people who are disabled face issues in performing their daily tasks which deprives them of taking action against fraudsters and criminals. In the case of PwDs, there are not many improvements being done to enhance their day-to-day activities. There are some situations such as how to manage a visually impaired, physically disabled person who cannot be present at the site for the transaction and he/she is not able to complete the banking procedures on their own efficiently. Previous papers on issues related to PwDs have been reviewed where we found that there is a lack of awareness and support for PwDs in banking, some studies of Britain shows that foreign banks, including Indian banks, lack accessibility support, and the existence of poor technology adoption in Indian banks.

So, we have proposed a paper on Accessible and Secure Artificial Intelligence-based Banking Solution in the International Conference on Smart Data Intelligence, ICSMDI 2021, Tamil Nadu. It mainly focuses on the PWD (Persons with Disability) community. However, the general community also can take advantage of our system.

Our solution will assist them in carrying out their banking transactions with great ease and at the same time doing it in a very secure way. Our proposed solution involves the use of cutting-edge technologies such as a pinch of computer vision in the form of Optical Character Recognition (OCR) for extracting the user credentials and the implementation of User Identity Verification through Facial Recognition. The system is developed using Python's Flask - a web development framework and Web suite that helps almost any kind of user to access transactions once it completes the one-time hassle-free electronic KYC. It works on Python's facial recognition library which is a wrapper built on top of Dlib that uses face embeddings. And generate the distance between two person's face embeddings. This helps to authenticate the user without actually asking for its credentials such as passwords, etc. The entire system is very affordable and doesn't require any kind of expensive cameras or high-end systems. And the beauty of our solution is that it works well in poor lighting conditions. In a nutshell, we are moving at a great pace but we also require numerous initiatives in developing an affordable and easily accessible solution for various minorities living with us.

-Shivam Yadav

BE IT

Truth About Hackers and Ethical/Un-Ethical Hacking

Whenever we learn the term hacking, we have the imagination of being hacked or a cybercrime. Hacking is not a crime. It is the Art of Manipulating a Smart and Super Computer. Honestly speaking, there are many definitions of a hacker. Ask this question from a phalanx, you will get a brand-new answer each time because more mouths will have more talks, and this is often the reason behind the various definitions of hackers, which in my opinion, is sort of justified for everybody has a right to think differently.

In the early 1990s, the term "Hacker", was used to describe a great programmer who is capable of hacking into a system and who can build complex logic. But it is painful to know that we get negative hype from our Media and other social media these days. They started referring to hackers as thieves who can find new ways to exploit Bank accounts, credit card information, and access to social media pages. This is what the media is creating an image of hackers these days. This is often untrue because everything has good and bad aspects. The media has been highlighting the negative aspect, but the person who is protecting organizations by responsibly disclosing vulnerabilities is not stressed.

However, if you look back in the early 1990s; you would find a few conman definitions by the Media, such as creative, can solve any problems, and new ways of compromising new targets. Thus, the term is broken down into three parts: –

1. **White hat hackers:** – This kind of hacker is employed by the organization to perform security tasks like finding the vulnerabilities that a hacker might be able to attack. They are called security professionals & Security researchers.
2. **Black hat hackers:** – This kind of hacker is known as "BAD GUY". who use their knowledge for exploiting bank accounts, credit card information, and accessing personal information through social media? They are also called a "Cracker". They are often referred to by the media as a "HACKER".
3. **Gray hat hackers:** – These kinds of hackers are an intermediate between White hat hackers and Black hat hackers. They can work as security professionals in an organization and responsibly disclose everything to them. However, they might leave the backdoor and access it later and sell or steal the data.

Similarly, we have some more categories of hackers which are listed below. You have often heard about them.

1. **Script Kiddie:** - These kinds of hackers are those who have a lack of knowledge of Exploiting works and always rely upon using exploits that someone else created. They may be able to compromise the target but cannot modify or debug the exploit if it doesn't work. They are also called Skids.
2. **Elite Hacker:** - An Elite Hacker, also referred to as 133t or 1337. These kinds of hackers have deep knowledge of Exploits, and they can modify the code which is written from the other. They are someone who has elite skills in hacking.
3. **Hacktivists:** - They have a group of hackers that hack a computer for some purpose or cause, like political gain, freedom of speech, human rights, and so on.
4. **Ethical Hackers:** - These kinds of hackers are employed by the organization for performing vulnerability tests and block critical vulnerabilities, which a hacker might take advantage of exploiting the systems and server. The only difference between an Ethical hacker and a hacker is the permission of access.

What is Ethical Hacking?

Computer Hope defines ethical hacking as hacking done by a corporation or individual to work out where potential security threats might be in a business's network based on authorizations provided by the particle company. The information that the ethical hacker discovers can then address the perceived security threats and tighten up the device network as required.

There are a couple of elements that require to be in situ, however, before hacking is taken into account as ethical:

1. You have to possess expressed or written permission to probe the network and identify any security risks;
2. You respect individual or company privacy;
3. You close out any work that you were doing so as not to expose yourself to potential security risks; and
4. You let the software developer or hardware manufacturer know of any security risks that you discover unless your company already knew about said risks.

If all of those elements are in situ, then you're in a safe condition and may ethically hack a company network to determine security risks. If any of the above elements are missing, you are simply a hacker and not an ethical one.

What is the Difference Between Ethical Hacking and Penetration Testing?

Penetration Testing

It's a subclass of ethical hacking; it comprises a set of methods and procedures that aim at testing/protecting an organization's security.

The primary purpose is to seek out vulnerabilities within the target environment. Penetration testing focuses on the security of the specific area defined for testing. The penetration tester is predicted to be aware of executing different methodologies and knowing the purpose of each method, how and when to execute. Prior experience in ethical hacking is required to be a good penetration tester. A penetration tester can work on a specific domain and network. The knowledge expected is more precise at an expert level.

Ethical Hacking

It aims to encompass various attacks through different hacking techniques to seek out security flaws. Ethical hacking may be extended-term and penetration testing is one among the functions of the ethical hacker. Ethical hackers should have a vast knowledge of the hacking methodologies. Ethical hacking is a step towards penetration testing. Unless one knows the method, they can't conduct a pen test. Being an ethical hacker, you should be aware of the technicalities of the software and hardware of digital devices connected to the network.

Is Ethical Hacking a Good Career?

To be sure, to admit you hack for a living might get you some strange looks as people envision you engaging in exploits that you won't have honestly precursor of. You might be working your way through an e-commerce website database, trying to determine the exact security measures that are required to be enacted to ensure optimal safety of the information within the database; otherwise, you might be trying to shield valuable information during a particular branch of the military. Generally speaking, hacking is viewed with raised eyebrows questioningly; people are still thinking of hacking as a crime for certain societies instead of seeing it as a good career choice. However, it's a career like no other, but that means there's a lot of prep work before you can even consider having a career as an ethical hacker. It would be best if you had a significant understanding of computer security, and while a certificate, diploma, or degree in computer sciences wouldn't hurt, it's not always required.

First and foremost, you would like to have an understanding of how computers work and communicate with one another. Yes, the work looks glamorous on the large screen in flicks like *Sneakers*; what's not shown there, however, is the sheer volume of both knowledge and experience you need before entering the career. With that being said, and provided you gain the experience you need on your equipment rather than trying to hack someone else's organizational security, ethical hacking can be one of the most uniquely challenging career paths you would possibly undertake. Freelancing, of course, may be an excellent way to achieve some experience once you've got an excellent deal of practice trying to hack your equipment. The problem with freelancing is, as you might expect, it's not a stable position, so there are some occasions where it's hard to afford your favorite brand of coffee from your favorite store. It is an excellent way to garner both experience and revenue, though, so if you're trying to build your rep and resume by working through some freelancing jobs, that's not the wrong first place to start.

However, once you've gotten that all-important experience, applying to tech companies to see if they're looking to hire ethical hackers is a significant next step. Your inclination might very well be to apply to all or any larger firms, but you might be shooting yourself within the foot a bit, as smaller tech firms might have the lower pay scale than that you've been looking for. Keep your options open, and you would possibly find that entering the field as an ethical hacker might be a great career choice.

Is Ethical Hacking an Oxymoron?

Strictly speaking, an oxymoron is when two contradictory terms appear in conjunction. However, when it involves ethical hacking, nothing could be beyond the truth. According to Cybrary, Ethical Hackers use the same techniques as those who hack for their appalling purposes, but with nobler goals.

Ethical hacking means while you would possibly be hacking into an organization's computer system and infrastructure, you're documenting evidence of those security issues instead of exploiting them for your attain. Cybrary says that the field of ethical hacking is growing fast, although it has been around since the 1970s at the very least; being able to hack websites and report to an organization precisely the issues could be as far as security goals would offer those looking for a career challenge they might be looking for.

However, it's important to recognize precisely what an ethical hacker does during their day-to-day responsibilities. According to me, ethical hackers spend a lot of time just doing paperwork; it might seem that's the most essential commonality with ethical hacking and the other stuff – the paperwork that needs to happen to make sure that everything gets done when it should get done – to the extent that Miller himself has said that you spend a lot longer filling out paperwork than you would possibly have otherwise expected.

Black Box Ethical Hacking

Essentially, a black box ethical hacker is someone who has zero information about the targeted organization. Attackers might use whatever means at their disposal to attack instead of finessing any particular attack. A black box ethical hacking, therefore, is one in which there doesn't seem to be any specific focus on the attack, as the attacker doesn't know anything about the targeted organization.

White Box Ethical Hacking

There are three considerations when it comes to white box ethical hacking: time and money and the object of the Security(i.e. CIA trio). Going into this situation, a white box ethical attack is one in which everything is known about the targeted organization. It would effectively be an attack that one might suspect of a learned insider or someone who knows everything about the systems to execute an effective hacking attack. Upper management, Human Resources, and Legal and Technical Support Management are generally the teams that work closely with the hacking groups to facilitate the white box ethical hacking.

Grey Box Ethical Hacking

A grey box ethical hacking test combines the most effective of both worlds: the white-box hackers and, black box hackers. Essentially, something is known about the target by the organization, but that might change from attack to attack. But the drawbacks that the ethical hacker might experience are similar to those encountered while performing white-box attacks.

Conclusion:

As Security awareness is usually a double-edged sword similarly we might look at an ethical hacker with a raised eyebrow, thanks largely to the image hackers have gotten from film and television shows; ethical hacking is an ethically sound career that could prove quite beneficial to all the future companies and organizations. Ethical hacking could potentially offer a challenging opportunity for all the students who have basic knowledge of computers for a greater purpose – enhancing security.

The views expressed in this article are based on the following reference:

<https://resources.infosecinstitute.com/topic/ethical-hacking-career/>

-Upmanyu Jha
SE Comps A

The “Utopia” Decentralization

Decentralization... Hmm, so what does this term mean?

It means the dispersion or distribution of functions and power, to be more precise it means the delegation of power from a central authority to regional and local authorities.

So today we are not talking about any normal decentralization, rather we will talk about decentralization in blockchain or decentralization through blockchain.

What is decentralization through blockchain? First start with what is blockchain?

Blockchain seems complicated, I mean it can be, but its core concept is very simple. A blockchain is a type of database. So, to understand blockchain it will be easier to go through the database first.

A database is a collection of information that has to be stored electronically on a computer system. Data or information that has been stored in a database is in tabular format so it can be easier to search and filter specific information. Now you will be asking, so what's the difference between someone using a spreadsheet to store information rather than a database?

Spreadsheets are designed for a person or small number of people to save and access limited amount of information but a database is designed for a large number of people to access/filter/manipulate a larger amount of information quickly and easily at any given point of time.

Large databases can be achieved from storing data on servers that are made of powerful computers in miles of radius.

So how is a blockchain different from a database?

A key difference between a typical database and a blockchain is the way data is structured. A blockchain collects information in a group, aka blocks and these blocks are chained with previously stored blocks which forms a chain of data known as blockchain.

A database structures its data into tables whereas a blockchain, like its name implies, structures its data into blocks that are chained together. This makes it so that all blockchains are databases but not all databases are blockchains. This system also inherently makes an irreversible timeline of data when implemented in a decentralized nature. When a block is filled it is set in stone and becomes a part of this timeline. Each block in the chain is given an exact timestamp when it is added to the chain.

This is how a crypto transaction and a blockchain works.

Oh, I forgot our main topic was Decentralization, so let's start with that again.

I have already told you the meaning is decentralization, let's start with how decentralization works digitally?

So today all our data has been stored at a centralized data facility which is owned by a major corporate company for example Amazon, Facebook, Google, etc.

So which company owns how much data, I'll give you a few.

Let's start with everyone's favorite, Mark Zuckerberg's Facebook.

Facebook has been a revolution to the internet world and it has connected the whole world together but after that you know how user friendly Facebook has been in recent years.

It has been the world's most active user site on the internet, with 2.70 billion active users, I mean 34% of world population.

So, in this process Facebook has collected 3 million gigabytes (not in bits but in bytes) of information, so this much data has been controlled by Facebook alone and I can't start with Facebook owned Instagram and WhatsApp etc.

Let's Start with the second giant Google.

Google uses the same business model as Facebook, it stores data and analyzes it to make its business better.

The data owned by google is of 3.8 billion people roughly half of the population but there have been no data leaking issues with google but what about our personal data used by google to target ads etc., I think you all get it.

So, you get the problem and what's the solution, it's the article you are reading about.

Let me start with basics, decentralization is the process in which all the data from the centralized system will be diverted in decentralized form and will be spread across all users, so the user's data will be in users' hand and not in company owners.

How does it work?

Let's assume you send a text "How are you" from a decentralized app, it will send that message to user but the data of that text will be divided across all the users of that app, now you are thinking what if other user access my data, there's the solution first your data will be in encrypted format, so no one can break that encryption, second if someone tries to decrypt the message and somehow he got successful but what he will do with only "H" part of message because all other part has been stored to other user devices.

Now you are thinking about people know how this technology works and everything but why it's not successful, why I can't see any decentralized app (there are few like Utopia <https://u.is/en/>), there's a major problem if we store data back to user but not server, it will be fast but it will take storage from users' device rather than server and the more the user more the data load to users' device.

What's the solution?

Just like the famous series "Silicon Valley", we have to create a compression algorithm that can compress a file as low size as possible without losing data and when we decompress, we should get the same file.

And that's our "Utopia".

"Utopia means a place of ideal perfection especially in laws, government and social conditions".

-Mahender Choudary
FE A

Technology That Fulfills Einstein's Dream A Century Later

In 2016 exactly a century later the world-famous genius Albert Einstein presented the theory of relativity the world of science and astronomy was buzzing with enthusiasm and that was bound to happen for the 42-year efforts of MIT scientist Kip Thorne, Reiner Weiss and Ronald Drever and several others had finally yielded a fruit. The Laser Interferometer Gravitational-Wave Observatory also known as LIGO, one of the world's most ambitious and expensive projects detected the presence of Gravitational waves proving Einstein and his theory right AGAIN! The concept that Einstein was himself sceptical about had finally been proven right by tremendous trials and tribulations.

So, what are gravitational waves? For understanding that we need to know the subtle differences between Einstein's and Newton's definition of Gravity. According to Newton, Gravity is an inherent property which is proportional to the product of masses and square of the distances between 2 objects. It can be written as. $F = G(m_1m_2)/R^2$

Where G is gravitational constant. We all know that. However, Newton's laws fail when it comes to objects travelling at very high speeds and subsequently when we start talking about all planets and stars.

Here's where Einstein comes into picture. Einstein changed the definition of gravity for the world and to start with he introduced the concept of spacetime sheet. Which combines two separate entities called space (the space around us i.e., the x, y, z axes) and time as one single entity known as spacetime sheet and gravity being a virtue of the depressions or curvature produced in the spacetime sheet. For simplicity you can view spacetime sheet as a trampoline where heavy objects are placed on it

Okay, imagine a trampoline or a sheet. Let's place a heavy object, example: an iron ball on the sheet, due to its mass or rather mass density the object shall produce a depression in the trampoline. If we place a very small object near the iron ball, say a marble. It will fall downwards due to the depression. Don't forget that the marble produces a depression too, however the mass density of the marble is so small that the curvature is negligible.

Let's take this same concept to a higher level. Now our iron ball is replaced by a planet and the marble by a satellite. Both earth and the satellite create curvature in the spacetime sheet but in comparison to earth the curvature created by the satellite is insignificant and hence it experiences gravity from the earth. Einstein put his view of gravity in the form of his field equation that is.

Explaining this equation is beyond the scope of this article. However needless to say this equation was a massive transition in the domain of astrophysics.

This was Einstein's version of gravity in which spacetime is the protagonist and even the theatre. The spacetime sheet could be truly called the alphabet of Einsteinian physics for the further revolutionary theories put forward later viz Black holes, wormholes, gravitational redshift and in our case Gravitational waves were all built on the foundation of the spacetime continuum.

Since now we have a faint idea about Spacetime, its curvature and the subsequent gravity that it gives rise to. We can come to Gravitational Waves.

Gravitational Waves are ripples in the spacetime continuum when accelerating objects propagate on the sheet. They are longitudinal in nature and produce contractions and relaxations in whatever media they pass. You could equate them with the waves produced in water for better understanding. However gravitational waves aren't mechanical in nature, they are invisible to us and travel at the speed of light. Unfortunately Interpreting these mystery waves is as good as finding a needle in a heap of hay.

The primary reason which makes gravitational waves so incomprehensible is that almost every discovery about the universe till today was made by using electromagnetic radiation since these waves are invisible; they leave no other option for researchers than to exploit the gravitational wave's property of stretching and relaxing or changing the planar dimensions of the object or media through which it courses. However, that has its own share of problems; gravitational waves are very weak, so normal accelerating stellar objects like planets or moderate sized stars aren't the optimum sources. We would need extremely magnanimous things or phenomena to study about gravitational waves example supermassive black holes

Woefully that doesn't solve the problem, even after so many efforts the change in dimensions or length that a gravitational wave will produce (represented by $\Delta L/L$) is 0.000000000000000000000001 m which is nearly 1/1000 times the width of the proton. This was the very reason why Einstein had abandoned the idea of gravitational waves in 1916.

However, years later in the 1960's American scientist Joseph Weber started working on the basis of LIGO, which is Laser interferometry. In 1967 Reiner Weiss laid the basis of construction of LIGO and he was joined by Kip Throne one year later. However, the road for construction of LIGO wasn't smooth enough. They faced major funding issues by the U.S government and its credibility was often questioned. Finally, after a lot of issues regarding the prototype and the funds; the construction of ligo was completed in 2002.

Nearly 36 years after the inception of the idea LIGO started functioning, yet the massive path breaking discovery was quite far. Between 2002 and 2010 LIGO made no detection whatsoever. The team of scientists at LIGO made variations in it and by 2015 almost 620 million dollars were spent on it. LIGO was almost a massive failure.

However, the situation changed on 14th September 2015; at 9:51 UTC. LIGO detected activity from 2 supermassive merging black holes of 30 solar masses about 1.3 billion light years away. The merging black holes released a new hope for humanity probably when earth was forming multicellular life and it reached in the form of gravitational waves on earth.

In 2015 This process of detection of gravitational waves was based on laser interferometry.

In the set up each observatory has 2 arms that are 4 Kms long.

The interferometer consists of a light source and a beam splitter, 2 mirrors and a photon detector. Under normal conditions when light is incident on the splitter it splits into 2 parts. These waves travel the same distance and are reflected by the two mirrors placed in the set up, they come back at the same spot and cause total destructive interference which doesn't cause formation of light bands in the detector.

However, when gravitational waves pass through LIGO they inherently stretch and contract the arms of the interferometer, the paths travelled by both waves is different, hence unlike the previous case total destructive interference does not take place due to which light is detected by the photon detector and the presence of gravitational waves was proved

This data has numerous uses, ones which might be even beyond the comprehensive ability of commoners. Gravitational waves are basically the universe talking to us for the limitations that electromagnetic radiation placed on humankind could be overcome by these mystery waves. Right from the core of a supernova to how neutron stars behave, gravitational waves have opened a new portal for humans. For their contribution in detecting gravitational waves Kip Thorne, Reiner Weiss and Ronald Drever received the Nobel prize in the year 2016.

The story of Gravitational waves has come a long way. Working for 42 years relentlessly is definitely not easy. This saga indeed inspires and exemplifies humankind's endless pursuit for knowledge and who knows might be creating littler Reiner Weiss, Kip Thorne and Ronald Drever all over the world?

In a famous NGC documentary Reiner Weiss in his own words says, "I wish that there was some way we could tell Einstein that we made it, that he was right."

If something like that happens, I bet Einstein's joy and that of several other individuals will know no bounds

-Rhea Bhalekar
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