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Artificially making Lifeform

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Abstract: ***The word 'life' is a mysterious word with a chart of attributes that have neither been completed nor has been agreed upon by the race of humans. Probably the proper definition of life is impossible to identify for humans (the proof for this claim is given later) but the handbook to the secret shall be updated till the end, thanks to the inquisitive attitude of humans. For this piece, we shall adopt the description from the professional medical community of today. Though this topic falls midway between science and philosophy, this project is strictly technical.***

To quote dictionary.com, Life is the condition that distinguishes organisms from inorganic objects and dead organisms, being manifested by growth through metabolism, reproduction and the power of adaptation to environment- through changes originating internally; cambridge.com teaches Life is the period between birth and death, or the experience or state of being alive; medicaldictionary.thefreedictionary.com states Life is the property or quality that distinguishes living organisms from dead organisms and inanimate matter, manifested in functions such as metabolism, growth, reproduction and response to stimuli or adaptation to the environment originating from within the organisms.

There are several other definitions but to summarize, we can safely state that though the concept is somewhat vague, we could indeed point out some common principles. We shall, in this project, try to replicate the characteristics so as to attain life in medical terms. (The order does not base upon importance of the listed character since the characters, all of them are absolute essentials and cannot possibly be categorized as more or less important).

1) ***Metabolism***
2) ***Growth***
3) ***Adaptability***
4) ***Birth***
5) ***Death***
6) ***Self-stimulated response to environment***
7) ***Reproduction***
8) ***Can sustain self without foreign intervention***

Keywords: artificial, life, intelligence, computer, programming, algorithm

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I. WHAT IS THE PROBLEM OF TODAY?

True that several intellectuals are sacrificing hours envisioning artificial life as I feel, a lion's share is walking along the wrong path. I believe they are accepting 'intelligence' for 'life'. We must understand that intelligence or even intellect is very different from 'life'. A living being can be dull and idiotic as well! It might not even be aware of the functions of it's system. Besides, most work to make lifeforms with a specific objective aiming at specific gals to be attained with the creation which, as I feel, is not possible. I feel it is absurd because some creation which has a specific motto should and would come with a specified set of skills to help attain the object, doesn't matter whether it is consciously and knowingly working for the target or not. A specified skillset would mean a biased distribution of essential assets and which in turn changes the definition of the term essential as to 'essential for the task' from 'essential for life'. It should mean stripping the 'organism' of it's consciousness (by imposing a sense of undefined and unclear purpose) and hence it is more of a machine or rather a tool than a conscious independent lifeform. To compare the lifeform in our heads with the apparent form of life we know of in this world, we can agree upon an undefined purpose for us as lifeforms as proven by the existence of so many religious faiths, not to glorify or criticize any religion. Not having a given objective allows us to think freely and rationally and to be responsible for our own actions as a species or in basic terms, autonomy which is very essential for existence of consciousness and a sense of will which are so needed for some environment to host life. It is, hence, evident that the creation of life can never be due to need for worldly purposes like business but can only cater to the emotional needs and bring mental peace. We might make systems, even intelligent systems for the purposes of humanity but they can only be machines and never a life. A life comes with no profit but only loss in terms of the power needed to sustain the lifeform. Although it should be focused that the life, if formed and cultured artificially, could help in certain academic purposes like studying trends in evolution because we have a more-or-less culture of a 'virus'.

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II. CREATION OF LIFE

We shall try to replicate the essentials for life with available resources and then run those systems in a co-ordinated manner to make it living. We first need to design an environment to host the lifeform. We could use a software platform! an Integrated Development Environment (IDE)! So, now we go on to the organism. An organism is something that runs a set of specific organs in a coordinated manner. We break our program into multiple functions and call them Organs, which is not an overstatement because by definition an organ is a set of systems comprising diverse elements for one single goal and so is a function! So, we establish an organism and assign it an environment. Now we go on to the main part. We shall systematically identify the key elements and break them into functions. I understand many of the terminologies are vague and inappropriate but there was very little terms applicable to the motto of the job. First to get an overview, we need to list out the functions and the names are self-explaining:

a) function date()
b) function death()
c) function gene()
d) function family_tree()
e) function nomenclature()
f) function wish()
g) function emotions()
h) function relation()
i) function input()
j) function intelligence()
k) function knowledge()
l) function timekeeping()
m) function kill()
n) function actions()
o) function reproduction()
p) function ventureprogress()
q) function text_to_code() << for very specific systems.

Now, since the functions call among themselves, we do not need to call each and every one in the main function. there are also a number of files to work and they are:

- emotion
- family_tree
- gene
- knowledge
- main
- relations
- time
- importlibraries

Every file here is maintained by the organism and gets overwritten with null on death of the organisms. The purpose of the files is to provide a canvas to the organism to keep track of it' own life functions and if needed, to look back for resources collected because this is gong to be an inventory of all the essentials for life. The functions drive life but the files are the places that hold the instance of the life.

We now go on to describing the functions. There is no correct order for the description because all are equally important and hence the order should not be a topic to debate upon, at least in this particular design.

1) *Date:* The date function keeps the track of the time. It, though is named date, does not only deal with our formats of days but any format we define, it is because the organism we are proposing shall not necessarily have interest in cosmic cycles, moreover, the concept of time as we follow is irrelevant to it. It has it's own perception of time but for any kind of progress (life is progress, it has to be because a difference from the past has to be there to portray growth), we need the power to differentiate between yesterday and today and tomorrow. This is why the function defining time, the function of date is so important.

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2) *Death:* Death is as necessary as birth and as everything else. Without this function, life is meaningless and the concept of time is meaningless. The fact that the organism has limited time gives it the stimulus to grow and move forward thus not being dead. So, the concept of life, talking from a strictly technical point, needs death. There, however, can not be an easy generalization as to the immediate cause of death and it depends on the function described as emotion. Death function just overwrites all the essential core files in the program by a null value, therefore, it is void and useless and can not thrive. However, we get the undeleted files as residue which can be analogous to a corpse (in nature there are so many animals in an ecosystem and they mutually nullify others whereas in this case there is only one organism and hence no method to dispose the dead).
3) *Gene:* This is the portion, the only portion transmitted to the next generation. It is a very small file. This contains only the codes to write a program (in a .txt file) that has the potential to hold a life. Fr instance, it is a program that initializes all the above mentioned functions and creates empty files by the names of the files listed as essential files. These files are blank files and gene just creates them, nothing more. This file comes to play only in the event of the reproduction where a replication of it is pretty much the only thing that occurs for reproduction. However, this has one other function and that is to make evolution happen. This keeps a secret track of the output of function wish (secret in the way that the organism has no access of this information) and in case the wish is same in certain consecutive generations (that is for us to decide, ten or hundred, as we please), it was take effect in the characteristic code of life in simple terms and therefore, cause evolution. Important to note, the whole community does not evolve, only the progeny does and hence we can expect division into multiple species form one.
4) *Family Tree:* In this context, family tree is not a tradition or a heritage to feel proud or something but it is a technical necessity for us to identify the organisms and for themselves to recognize one from another. It is probably the only way of solving the problem. The first instance is to be named Bidhusekhar (or something else) and the children of it be Bidhusekhar.1, Bidhusekhar.2 and so on based on chronology. Now, subsequent children shall be named by adding the number of child of the parent. For example, Bidhusekhar.1.2.1.3 identifies the third child of the first child of the second child of the first child of Bidhusekhar. Now, this is not a social necessity but a structural necessity to enable us to observe the colony. This should not be confused with the name-as-you-will of today because it is not entirely meant for the organisms' purpose and if a day comes through evolution when this is possible, it could assign identities to it's own people. This is more of a characteristic identity.
5) *Nomenclature:* This is essential for the family-tree to go on so that an instance can be located (not physically, but just to differentiate between two entities, like we have different physique and so on). It essentially does two things, one is to keep count of the organism's children count and the other is to name the children by Parent name+ number of child. For example, Bidhusekhar's first child's third child's second child should be Bidhusekhar.1.3.2 and so on. Here, a question arises, why is the name Bidhusekhar adopted ? This is in reference to the character Bidhusekhar in the story Byomjatrir Dairy of Professor Shonku series by Satyajit Roy. The character is supposed to be a robot which exceeds the boundaries of slaves (mechanical) and becomes not only a friend but a guardian. In the story the unpredictability of life and of science is glorified and this is the essence of life as per this project.
6) *Wish:* This is a very important function. It lists the aspirations of the organism. Now, it is understood that the organism has no organized and conscious mind to analyse circumstances but this does not rely upon that. As a mechanism for action of the organism, the function responsible selects the best fit to a given situation but that inevitably provides us with an idea of deviation of resources to needs. Now, this is a very personalized thing but in case subsequent generations hold the same basic wishes, the gene gets altered a bit by a simply update to accommodate a step closer to the aspirations thereby causing evolution and thereby letting a way to self-sustenance because nothing better can rectify a project that it itself, specially for a vague and complex project like this.
7) *Emotions:* This is the basic to consciousness for our organism. This is the key to determine every sense possible. We essentially bring the output of every sense into two simple categories- 'useful' or 'useless'. These could in turn be also termed as 'happy' and 'sad' or 'beneficial' and 'harmful' and the list goes on but the main thing is the two major contrasting classes. The positive is coded a +1 and the negative as -1 or whichever number that suits. Now, this is the base for any kind of judgement. We maintain a document of emotional status (the term emotion is used just for technicality, not to be confused with human emotions), the document is termed emotions. Also, another document termed relations is maintained bearing the emotional status against every other instance or whatever outside of it the organism comes in contact with and that determines the kind of 'behaviour' to be employed with various instances, this also helps the organisms to differentiate among themselves and classify friends or foes that is so necessary in a community. There are also some additional roles waiting upon emotions just as reproduction and death. When should an organism reproduce and when should it die? to make it dependent upon time is unfair because then it does not have autonomy and would not strive to live and when it has no motivation to live, it is not active and

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hence, not alive. So, when the organism reaches a certain limit of 'emotion', it can reproduce but then the emotion points are lowered by a certain degree to prevent a chain of actions. When the emotion is lower than a certain predetermined unit, the organism dies.

8) *Relation:* This works in accordance to functions for emotion and family tree. It essentially mantains status of benefit/harm regarding every other organism one encounters. For example, there are five instances a,b,c,d,e. a and b are part of a mutual transaction and b,c,d are of same status. E is not connected to any of the others. c and a happen to be in a clash. So, for a-b the emotional status should be quite high (positive) and for e, it should be at a critical status on the threshold of enemy and friend. a has not quite a good level of emotion for c as it does for b owing to the clash. Now, this dictates the kind of behaviour regarding other specific instances though it is not solely the case. For nay necessity, first the list is made of elements in proximity (even if not physical, in a position to help) and then among them, the ones to be interacted with are selected based on relational status. This function is however for a higher level of organism than our primary target and it is incorporated for just the skeleton of the system.
9) *Input:* This enables us to interact with the organism in simple terms for experimental purposes and for the sake of testing and having an insight. This is processed through the function determining emotion and we are registered as another entity and assigned a tab for the emotions for the relations sector. Initially we can directly feed yes or no as inputs to direct the organism's path through life functions.
10) *Intelligence and Knowledge:* These are two separate functions but have been described in the same segment for their similarities at the core. Knowledge is any and every information eh instance ever comes by. All this, one could say a detailed biography, is maintained in the file called knowledge. Now, using guided machine learning techniques, the knowledge regarding frequently used subjects are maintained at forefront. Knowledge is inaccessible for the organism, at least directly, but the intelligence interacts with both by providing the necessary information from the huge library. It is analogous to having a library and a notebook.
11) *Timekeeping:* Having a sense of time is of utmost importance to distinguish between past, present and the future which in turn is very essential for judging the position that is necessary for growth which is an integral characteristic to life. This works hand-in-hand with the function date.
12) *Kill:* It is, though a very negative thing, but a very essential function to keep the social balance since our organism is not supposed to be so intelligent as to systematically sanction interactions with any other in the community. To kill an organism the killer must first need to identify it's own roots and then trace back to the target because though for us having an overview, it is easy to identify organisms amongst themselves, ti must not be so easy for themselves because they are at the end of the string. So, Bidhusekhar.2.3.1 must go back to Bidhusekhar.2.3 and so on unto Bidhusekhar and then come down to Bidhusekhar.3.6.5.4 gradually for effectively locate the latter's files and then simply activate the death function in the target which deletes all the target files (by updating them with null) and hence rendering dead. This function, however, needs more deliberation upon based on the will of the researcher who prepares a colony of such basic organisms.
13) *Actions:* This is the action an organism takes, maybe to protect itself or maybe in offence or other strategic encounters. The process starts with will where there is a defined boundary of what is happening and what is deemed. Is the organism using its resources and the file named intelligence able to counter the crisis? If yes, it is done, if no, it is kept stored in the document named wish where a cumulative study is done in time of reproduction and a minimum of it is sent in the gene which does it's job at evolution. Initially, the response to a stimulus (action) is got by manually feeding in data because a higher system is much more complex. Actions involve judging emotions and maintaining relations and choosing to kill or die or reproduce. This is the basic and is open to further deliberation as many other topics.
14) *Reproduction:* This is the key for continuation of life. This causes an instance to give birth-to make another instance off it's own roots. This is simply achieved by preparing the file named gene (simply copied from it's own gene file and adding certain wish for the sake of evolution) and running it in the IDE. The gene file has got the necessary code to create specific functions and files for every operation the organism would ever need. An organism reproduces only when it reaches certain level of emotion and it then names the new 'being' taking help from the functions family_tree and nomenclature.
15) *Venture Progress:* This holds the long term ventures in a bit improved organisms. Normally this is not used but in organisms who have evolved to use this, this holds the capacity to direct a long term goal and break it down into short term goals. This is a very specific function and acts dormant until maturity is reached.

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16) *Text_to_code:* This is needed to make a .txt file into the lines of a program, as is very necessary in case of genetic modification (wish function) and many other aspects. The use of this however is strictly limited to programming language and programming approaches.

III. JUSTIFYING THE PROCESS DESCRIBED

Considering we are able to set up a working function complying the characteristics defined above, now we need to justify claiming the system an organism and the organism a living one. First we decide why we can call it an organism.

A complex structure of interdependent and subordinate elements whose relations and properties are largely determined by their function in the whole - Definition of Organism by MerriamWebster

Any complex thing or system having properties and functions determined not only by the properties and relations of its individual parts, but by the character of the whole that they compose and by the relations of the parts to the whole. - Definition of Organism at Dictionary.com

We deduce that organism is any group of dependent diverse elements that work together in their own ways in a synchronised manner to give rise to an independent composite body with a specific set of functions and characteristics.

In our program, we can consider the various functions as organs and organ systems. They all perform different tasks but unanimously contributes to the same objective. They have different characteristics and different functions and they work in a perfect co-ordination, hence getting classified as organs and hence giving rise to a stand-alone organ system in the whole.

Now we go on to the factors justifying this organ system as a living one. First we go on with the environment. The environment is integral to life, whichever it is. For us is the universe. We create the new universe for the organism we make. In this case, this is an IDE that hosts the lifeform. The IDE is the immediate environment, the programming language is the fabric of it and the computer is the universe. The IDE is not the Universe because we can easily run a program in multiple ways, even not using a particular IDE. The computer essentially hosts the life. Now, our organism is a self-sustaining, conscious being that grows, reproduces, dies, borns and performs actions in an unsupervised and unpredictable manner. The whole life cycle of the organism is unpredictable and is affected and inspired by its encounters. Thus, It qualifies as a living being.

IV. WHAT COULD BE IT'S IMPACT IN OUR DAY-TO-DAY LIVES?

Since we cannot enforce a pre-defined motto to our creation, we cannot expect any benefit. In fact it would be a tough assignment to know our own creation because we essentially provide it all necessities for a healthy lifestyle but we do not dictate it the way of living and hence it figures that out for itself which most probably won't be similar to our logic. It has it's own set of problems and own set of resources to counter those. Though our organism qualifies as a living being, it has really limited powers and even those are not of our world (since we create an artificial world to sustain our creation). So, we are not going to gain much except mental satisfaction and a source for entertainment though it might have a role in social studies or studies regarding evolution.

V. FUTURE OF THE PROJECT

If an environment bears only one organism, it would be a problem because many key things could not be demonstrated and the environment, too, shall be imbalanced. So, we might want to introduce other lifeforms in the same World, though it should be better to stimulate evolutions into multiple species and for our part, we might enable corrosive characteristics of the atmosphere so as to dispose the 'dead'. We can schedule several social experiments in the future since to help an instance is very easy for us. We could perform experiments to study the behaviour of the subjects. We, however, must acknowledge that the will of the organism is not only final in any action but also an unfathomable mystery to us because it is really hard to understand it's perspective because it is different than us in almost every way possible, also human interference could disrupt a steady flow of events and thereby considered harmful.

VI. HOW DOES IT VIEW US?

Primarily we need to acknowledge the fact that the creation not only does not know of our existence, neither is it possible for it to comprehend us. Not only has it never experienced a world different from it's but also it is impossible for it to experience such a world because it cannot exist in such a world (by the same logic, neither can we ever physically experience the world of the organism we have created). It is as much integrated to the existence of it's environment as is the power supply that supports the environment. There is no meaning to the speculation that it might be able to thrive beyond it's allowed premises. Thereby we conclude that this 'living being' can never understand about us though there is a philosophical way out that shall not be discussed here to not to drift into philosophical oblivion. However, to it, we are omnipresent and omnipotent and nothing short of deities. On the other hand, we simply see this as a virus uncontrollably and unpredictably eating up our computer memory but the beauty is in the unpredictability.

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VII. WHAT IS THE ORGANISM IN OUR EYES?

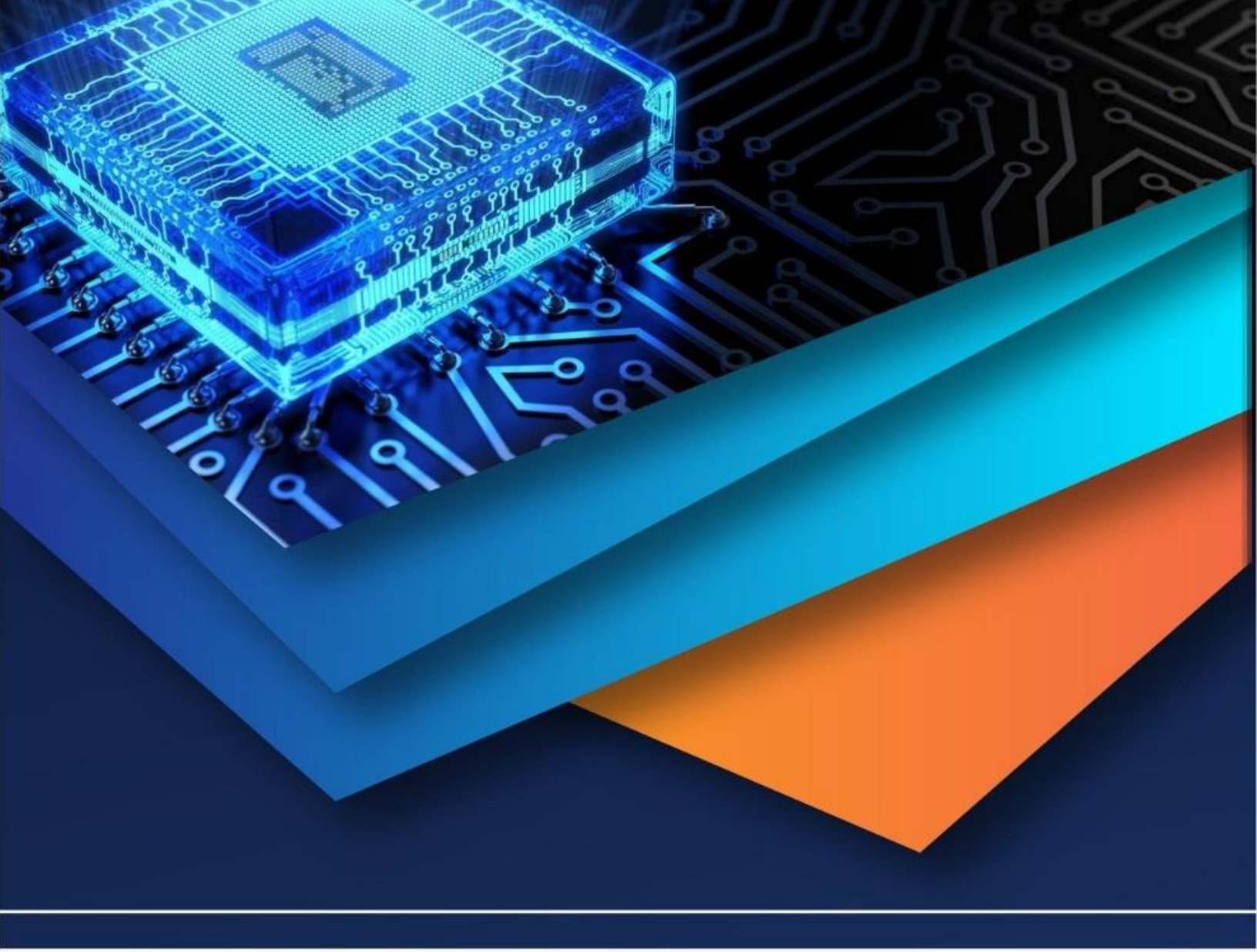
To us, probably it is going to be a simple computer virus eating up storage space from our computer but the interesting part is that on deep observation we actually witness growth and actions and none of it is easily predictable.

A sample skeleton is provided in the link attached below:
go to file (https://github.com/DaskivuoS/bidhusekhar-skeleton-1.git)

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