Problem 1

1. Honor Codes
2. Before I begin to solve this problem, I have read the syllabus uploaded into CANVAS by Dr.George. I find that the Page 8 of the syllabus shows the chapter of Student Honor Code and Academic Integrity. It said in detail like this: “You must pay attention to the Honor Code developed and endorsed by the Missouri S&T Student Council: the Honor Code can be found at [http://stuco.mst.edu/honor-code”.](http://stuco.mst.edu/honor-code\”.) Unfortunately, when I try to open this link using Google search. It turns out to be broken and it shows “Oops! That page cannot be found”. Luckily, I find it other links that describe the MST Honor Code, such as :”http://registrar.mst.edu/media/administrative/registrar/documents/academicregulations/2017-2018%20academic%20regulations\_rev\_9.22.17.pdf”.

The Standard of Conduct violations:

1. Academic dishonesty
2. Cheating
3. Plagiarism
4. Sabotage
5. Violation of University policies
6. Misuse in accordance with University policy of computing resources
7. Unauthorized entry into aa file to use, read, or change the contents, or for any other purpose.
8. Unauthorized transfer of a file.
9. Use of computing facilities to interfere with the work of another students, faculty member, or university official.

Accordingly, proposed sanction is showed as follows.

1. Warning.
2. Probation.
3. Loss of Privileges.
4. Discretionary Sanctions.
5. University Dismissal.
6. University Suspension.
7. University Expulsion.

If copying other people’s work and submitting it as your own. He or she may be deal with as discretionary sanctions.

1. The URL for the ACM Code of Conduct is <https://www.acm.org/about-acm/acm-code-of-ethics-and-professional-conduct>

The major section of the code, sections and subsections contained are as follows:

1. General Moral Imperatives.
   1. Contribute to society and human well-being.
   2. Avoid harm to others.
   3. Be honest and trustworthy.
   4. Be fair and take action not to discriminate.
   5. Honor property rights including copyrights and patent.
   6. Give proper credit for intellectual property.
   7. Respect the privacy of others.
   8. Honor confidentiality.
2. More Specific Professional Responsibilities.

2.1. Strive to achieve the hightest quality, effectiveness and dignity in both the process and products of professional work.

2.2 Acquire and maintain professional competence.

2.3 Know and respect existing laws pertaining to professional work.

2.4 Accept and provide appropriate professional review.

2.5 Give comprehensive and thorough evaluations of computer systems and their impacts, including analysis of possible risks.

2.6 Honor contracts, agreements, and assigned responsibilities.

2.7 Improve public understanding of computing and its consequences.

2.8 Access computing and communication resources only when authorized to do so.

1. Organizational Leadership Imperatives.

3.1 Articulate social responsibilities of members of an organizational unit and encourage full acceptance of those responsibilities.

3.2 Manage personnel and resources to design and build information systems that enhance the quality of working life.

3.3 Acknowledge and support proper and authorized uses of an organization's computing and communication resources.

3.4 Ensure that users and those who will be affected by a system have their needs clearly articulated during the assessment and design of requirements; later the system must be validated to meet requirements.

3.5 Articulate and support policies that protect the dignity of users and others affected by a computing system.

3.6 Create opportunities for members of the organization to learn the principles and limitations of computer systems.

4.Compliance with the Code.

4.1 Uphold and promote the principles of this Code.

4.2 Treat violations of this code as inconsistent with membership in the ACM.

1. I have read the syllabus and it describes as follows:

“5. I want people to work on the homework individually. You can talk to each other and give help, but this help should not take the form of letting other people copy your work. It is important that you understand how to do all the problems on your own so you can do well on the exams. If you need help, please ask questions in class, on Canvas, and come during office hours.”

“23. I am only interested in grading your original work. I am not interested in grading solutions to the problems that have been posted by other professors on the Web. You can lose many points if you simply copy solutions from other people or other sources.”

Therefore, I have known that I will lose many points if I just simply copy solutions from other people or other sources.I cannot let other classmate copy my work, but I can talk to each other and give help.

Problem 2

In order to give an answer to the problem of this part. Frankly speaking, I have referred to the “WIKIPEDIA”.

1. The age of the Earth is about 4.54±0.05 [billion](https://en.wikipedia.org/wiki/1,000,000,000" \o "1,000,000,000) years (4.54 × 109 years ± 1%). From WIKIPEDIA, this dating is based on evidence from [radiometric age-dating](https://en.wikipedia.org/wiki/Radiometric_dating" \o "Radiometric dating) of [meteorite](https://en.wikipedia.org/wiki/Meteorite" \o "Meteorite) material and is consistent with the radiometric ages of the oldest-known terrestrial and [lunar](https://en.wikipedia.org/wiki/Moon" \o "Moon) [samples](https://en.wikipedia.org/wiki/Moon_rock" \o "Moon rock).
2. Based on the clues from Meteorites, The age of the solar system, derived from the study of [meteorites](http://earthguide.ucsd.edu/virtualmuseum/Glossary_Astro/gloss_m-r.shtml" \l "meteorite) (thought to be the oldest accessible material around) is near 5 [billion](http://earthguide.ucsd.edu/virtualmuseum/Glossary_Astro/gloss_a-f.shtml" \l "billion) years.
3. The approximate age of the Milky Way as 13.6 billion years, based on this article:

(https://www.universetoday.com/9828/estimating-the-age-of-the-milky-way/)

1. From “WIKIPEDIA”, the estimated age of the Universe is 13.799±0.021 billion (109) years.
2. Earth has about 5 billion years left. Usually, the lifespan of the earth is wholly dependent upon the aging of the sun. In about 5 to 6 billion years from now the sun is going to reach a point where its core can no longer sustain the nuclear fusion is has been and it will grow into a red giant. That means it is possible the sun could grow enough to engulf the earth itself but even if it doesn't, life will cease to exist on earth at some point during the sun's growth into a red giant.
3. Reference link:https://blog.chron.com/sciguy/2012/11/heres-how-long-we-have-before-earth-is-uninhabitable/
4. <https://arxiv.org/pdf/1210.5721v1.pdf>

I have found a paper that topic is “Swansong Biospheres: Refuges for life and novel microbial biospheres on terrestrial planets near the end of their habitable lifetimes” published by Jack T. O’Malley-James and Jane S.Greaves, etc.

From this paper, it is easy to find that the maximum lifetime for life on Earth of 2.8 Gyr from present was found, given the presence of sheltered, high-altitude or high-latitude environments. These niches should accommodate life for about 1 Gyr beyond other surface environments. (1 Gyr=1 billion year).

The most likely sequence of events that will make the Earth uninhabitable is as follows:

* Increased temperatures cause increased atmospheric water vapor – a greenhouse gas, the presence of which further increases surface temperatures.
* For the next billion years or so this might increase cloud cover, cooling temperatures modestly.
* Eventually more energy from the Sun will win out, and higher temperatures lead to increased weathering of silicate rocks, drawing down more carbon from the atmosphere.
* Carbon is normally recycled though plate tectonics; however, increasing water loss eventually halts plate tectonics.
* Once carbon dioxide levels drop below this value, higher plants will begin to die off.
* This in turn decreases oxygen production, which, with continued consumption by biota and by oxidation of organic carbon in sedimentary rocks, leads to a steady decline in atmospheric oxygen to zero over a few million years.
* The end of animal life would occur a few million years after the end of plant life.
* Large endotherms (mammals, birds) would likely be the first group to become extinct due to their higher oxygen requirements.
* Fish, amphibians, reptiles would be able to survive for longer, but eventually the oceans will evaporate.
* The last life on Earth, in about 2.8 billion years, will be single-celled, heat-loving organisms in isolated pools of hot, salty water.

Unlike climate change, largely driven by greenhouse gases, this solar warming scenario in a couple of billion years is unstoppable. However, there is a silver lining. If the human species manages to survive its myriad other threats — asteroids, increasingly sophisticated biological weapons — we’re beginning to find a lot of planets around a lot of other worlds.

The latter we can prevent and extend the time horizon for this event.

1. Source:https://www.universetoday.com/18847/life-of-the-sun/

This lifespan began roughly 4.6 billion years ago, and will continue for about another 4.5 – 5.5 billion years, when it will deplete its supply of hydrogen, helium, and collapse into a white dwarf. But this is just the abridged version of the Sun’s lifespan. As always, God (or the Devil, depending on who you ask) is in the details!

To break it down, the Sun is about half way through the most stable part of its life. Over the course of the past four billion years, during which time planet Earth and the entire Solar System was born, it has remained relatively unchanged. This will stay the case for another four billion years, at which point, it will have exhausted its supply of hydrogen fuel. When that happens, some pretty drastic things will take place!

1. Source: <https://www.quora.com/What-is-the-lifespan-of-our-universe>
2. Source:https://baike.baidu.com/item/%E6%B1%89%E8%AF%BA%E5%A1%94/3468295?fr=aladdin
3. chineas version:https://www.douban.com/note/277141225/
4. Assumptions: one word per line of paper. 10 lines per paper.

0.9 billion paper will be needed to print out 9 billion words.

1. Assumptions: if one paper is 0.01 dollars, one cabinets can contain 1000 paper.

0.01\*0.9 billion= 0.9 billion/1000 cabinets=900,000 cabinets needed

1. it would take them about fifteen thousand years to complete the task.
2. The time span allocated was extended to approximately 2060 A.D.

What would have taken them fifteen thousand years it will be able to do in a hundred days.

1. 比如，谁也不知道世界末日之后会发生什么，人死了之后还会发生什么，手工排完长度为19的所有的26个英文字母所有可能组合的时候会发生什么（没具体算过，假设完成它所需时间是一个天文级数字）……   
     
   因为，人是有一种“回答”的欲望的，无论一个回答是否真的正确，一个回答总是能让回答者和提问者获得一种快感，至少是安慰。   
     
   所以，这时一个无法否定的回答就是一个过得去的回答：又快，你还很难说它错。   
     
   而相比之，获取真正的答案往往要难得多。但这种欲望也是存在的。   
     
   当另个欲望两相比较，人类往往会首先选择那个容易被快速满足的欲望去满足。   
     
   进一步地，甚至会用这个快速的满足带来的快感来去抑制那个不容易满足的欲望所带来的焦虑。   
     
   宗教，它之所以能够存在并发展壮大，我觉得根本的原因就是它满足了人们对“快速解答”的渴求。   
     
   “（我不想听你给我分析什么乱七八糟的心理学机制、社会学原理、人类荷尔蒙分泌……请直接）告诉我，为什么他会离开我？”   
     
   因为它用一个回答就能解释万事万物，让你一切的焦虑得到抚慰，哪怕是暂时的。   
     
   从功用上来讲，这一点科学永远、完全不可能代替它。   
     
   因为，当你需要一个快速解答抚平心中的焦虑的时候，科学绝对不是一个干脆利落的回答者。   
   PS：同样的心理机制，人类出现了拖延症……
2. The values: f(1)=91;f(-6)=91;f(200)=190;f(27)=91;

4.non-recursive.

5.<https://stackoverflow.com/questions/12678099/ackermann-function-understanding>

1. <http://code.activestate.com/recipes/474129-extended-great-common-divisor-function/>

7:Reference:https://stackoverflow.com/questions/216119/how-do-i-reverse-a-list-using-recursion-in-python

1. <https://www.geeksforgeeks.org/python-reversing-list/>
2. (a) The location of the skit is: <http://andrewchamblin.org/mitpages/MontyPython3.htm>

(b)Faculty meeting in the philosophy department at the university of Walamaloo.

(c)Faculty member in the philosophy department at the university of Walamaloo.

(d)five people, First Bruce, Second, third, fourth, Michael Baldwin.

(e)there is no rule six.

Homework 2

1. <https://math.stackexchange.com/questions/674533/prove-upper-bound-big-o-for-fibonaccis-sequence>
2. <https://proofwiki.org/wiki/K%C3%B6nig's_Tree_Lemma> Proof3