Summer internship

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Abstract

Money[1] is a tool of exchange, which can't exist unless there are goods produced and men able to produce them. Money is the material shape of the principle that men who wish to deal with one another must deal by trade and give value for value." "Wealth is the product of man's capacity to think [3].

[1] *Money is any item or verifiable record that is generally accepted as payment for goods and services and repayment of debts, such as taxes, in a particular country or socio-economic context.*

Contents

I Some text **2**

1 The best Quotes of "Catch 22" **3**
1.1 First quote . . . 3
1.2 Second quote . . . 3
1.3 Third quote . . . 3
1.4 Fourth quote . . . 3
1.4.1 continuation I . . . 3
1.4.2 continuation II . . . 4

2 Apollo 11 **5**

II Actual task **7**

3 Customized tables **8**
3.1 Algebra of logic . . . 8
3.2 The permutation sign for $n = 2$ . . . 8
3.3 Table of the field F_3 by multiplication . . . 8

4 Images **9**

5 Lists **12**
5.1 Ordered list . . . 12
5.1.1 The 3 best movies of all time . . . 12
5.2 Unordered list . . . 12
5.2.1 The 3 best movies for me . . . 12
5.3 Nested lists . . . 12
5.3.1 The 3 best movies of all time and have I Watched Them . 12

6 Mathematical formulas **13**
6.1 Integral . . . 13
6.2 Irrational expression . . . 13
6.3 random . . . 13
6.4 The theorem on the limit of a clamped function . . . 13

Part I

Some text

Chapter 1

The best Quotes of "Catch 22[1]"

1.1 First quote

Morale was deteriorating and it was all Yossarian's fault. The country was in peril; he was jeopardizing his traditional rights of freedom and independence by daring to exercise them [1].

1.2 Second quote

There was no telling what people might find out once they felt free to ask whatever questions they wanted to [1].

1.3 Third quote

Surely there can't be so many countries worth dying for.' Anything worth living for,' said Nately, 'is worth dying for.' And anything worth dying for,' answered the sacrilegious old man, 'is certainly worth living for [1].

1.4 Fourth quote

Sure, that's what I mean,' Doc Daneeka said. 'A little grease is what makes this world go round. One hand washes the other. Know what I mean? You scratch my back, I'll scratch yours [1].'

1.4.1 continuation I

Yossarian knew what he meant.

[1] *a dilemma or difficult circumstance from which there is no escape because of mutually conflicting or dependent conditions.*

1.4.2 continuation II

That's not what I meant,' Doc Daneeka said, as Yossarian began scratching his back.

Chapter 2

Apollo 11

Apollo 11 (July 16–24, 1969) was the American spaceflight that first landed humans on the Moon. Commander Neil Armstrong and lunar module pilot Buzz Aldrin landed the Apollo Lunar Module Eagle on July 20, 1969, at 20:17 UTC, and Armstrong became the first person to step onto the Moon's surface six hours and 39 minutes later, on July 21 at 02:56 UTC. Aldrin joined him 19 minutes later, and they spent about two and a quarter hours together exploring the site they had named Tranquility Base upon landing. Armstrong and Aldrin collected 47.5 pounds (21.5 kg) of lunar material to bring back to Earth as pilot Michael Collins flew the Command Module Columbia in lunar orbit, and were on the Moon's surface for 21 hours, 36 minutes before lifting off to rejoin Columbia.

Apollo 11 was launched by a Saturn V rocket from Kennedy Space Center on Merritt Island, Florida, on July 16 at 13:32 UTC, and it was the fifth crewed mission of NASA's[1] Apollo program. The Apollo spacecraft had three parts: a command module (CM) with a cabin for the three astronauts, the only part that returned to Earth; a service module (SM), which supported the command module with propulsion, electrical power, oxygen, and water; and a lunar module (LM) that had two stages—a descent stage for landing on the Moon and an ascent stage to place the astronauts back into lunar orbit.

After being sent to the Moon by the Saturn V's third stage, the astronauts separated the spacecraft from it and traveled for three days until they entered lunar orbit. Armstrong and Aldrin then moved into Eagle and landed in the Sea of Tranquility on July 20. The astronauts used Eagle's ascent stage to lift off from the lunar surface and rejoin Collins in the command module. They jettisoned Eagle before they performed the maneuvers that propelled Columbia out of the last of its 30 lunar orbits onto a trajectory back to Earth. They returned to Earth and splashed down in the Pacific Ocean on July 24 after more than eight days in space.

Armstrong's first step onto the lunar surface was broadcast on live TV to a worldwide audience. He described the event as "one small step for [a] man, one giant leap for mankind."Apollo 11 effectively proved US victory in the Space Race to demonstrate spaceflight superiority, by fulfilling a national goal pro-

[1]The National Aeronautics and Space Administration (NASA /næs/) is an independent agency of the US federal government responsible for the civil space program, aeronautics research, and space research.

posed in 1961 by President John F. Kennedy, "before this decade is out, of landing a man on the Moon and returning him safely to the Earth [2]."

Part II

Actual task

Chapter 3

Customized tables

3.1 Algebra of logic

A	B	$A \vee B$	$A \wedge B$
0	0	0	0
0	1	1	0
1	0	1	0
1	1	1	1

3.2 The permutation sign for $n = 2$

σ	$\begin{pmatrix} 1 & 2 \\ 1 & 2 \end{pmatrix}$	$\begin{pmatrix} 1 & 2 \\ 2 & 1 \end{pmatrix}$
sgn σ	1	-1

3.3 Table of the field F_3 by multiplication

$\cdot$	$f_0 = x^2 + 1$	$f_1 = x^2 + x$	$f_2 = x^2 + x + 1$
$f_0 = x^2 + 1$	f_0	f_0	f_0
$f_1 = x^2 + x$	f_0	f_1	f_2
$f_2 = x^2 + x + 1$	f_0	f_2	f_2

Chapter 4

Images

(a) Monsters INC[a]

[a]Cartoon "Monsters, Inc".

(b) HSE[a]

[a]Real life

(c) VAULT-TEC[a]

[a]Fallout video game series

(d) Umbrella corporation[a]

[a]Resident Evil video game series

Figure 4.1: Corporations of evil and my university

Figure 4.2: The best university in the world

Chapter 5

Lists

5.1 Ordered list

5.1.1 The 3 best movies of all time

1. 2001: A Space Odyssey (1968)
2. The Godfather (1972)
3. Citizen Kane (1941)

5.2 Unordered list

5.2.1 The 3 best movies for me

- Drive (2011)
- Inception (2010)
- Blade runner 2049 (2017)

5.3 Nested lists

5.3.1 The 3 best movies of all time and have I Watched Them

1. 2001: A Space Odyssey (1968)
    - viewed
    - once
2. The Godfather (1972)
    - viewed
    - twice
3. Citizen Kane (1941)
    - not viewed

Chapter 6

Mathematical formulas

6.1 Integral

$$\int_0^{+\infty} \frac{x \cdot \ln(x)}{(1+x^2)^2}\,dx = \int_{+\infty}^{0} \frac{t \cdot \ln(t)}{(t^2+1)^2}\,dt = -\int_{+\infty}^{0} \frac{t \cdot \ln(t)}{(t^2+1)^2}\,dt = 0$$

6.2 Irrational expression

$\frac{3-63\sqrt[3]{7}-8\sqrt[3]{49}}{1-2\sqrt[3]{7}-4\sqrt[3]{49}}$

$\alpha = \sqrt[3]{7}$

$\frac{3-63\alpha-8\alpha^2}{1-2\alpha-4\alpha^2} = \ldots$

6.3 random

$$g(r,\varphi) = \frac{r^2 \cdot \cos^2\varphi + r \cdot \sin\varphi}{\sqrt{r^2 \cdot \cos^2\varphi + r^2 \cdot \sin^2\varphi}} = r \cdot \cos^2\varphi + \sin\varphi$$

6.4 The theorem on the limit of a clamped function

$|\cos x - \cos y| = 2 \cdot |\sin\frac{x+y}{2} \cdot \sin\frac{x-y}{2}| \leq 2 \cdot |\sin\frac{x-y}{2}| \leq |x-y|$

Bibliography

[1] Joseph Heller. *Catch-22: a novel*, volume 4. Simon and Schuster, 1999.

[2] Randy L Korotev and Jeffrey J Gillis. A new look at the apollo 11 regolith and kreep. *Journal of Geophysical Research: Planets*, 106(E6):12339–12353, 2001.

[3] Ayn Rand. *Atlas shrugged*. Penguin, 2005.