00:00:00,580 --> 00:00:25,830

[Muziki]

00:00:25,830 --> 00:00:25,840

Utangulizi

00:00:25,840 --> 00:00:28,160

Jambo kila mtu mimi nina sony kutoka London katika

00:00:28,160 --> 00:00:30,720

Uingereza na leo nina kusisimua sana

00:00:30,720 --> 00:00:37,190

video kwako kwa Hesabu pepe

Kambi (VMC)

00:00:37,190 --> 00:00:43,670

Tutacheza mchezo wa kufurahisha wa hisabati unaoitwa kugawanyika au kuiba

00:00:43,670 --> 00:00:46,719

na mchezo huu ni wa wachezaji wawili.

00:00:46,719 --> 00:00:49,840

Kwa hivyo utangulizi wa haraka hugawanyika au kuiba

00:00:49,840 --> 00:00:53,680

ni mchezo unaotokana na Dilemma maarufu ya Wafungwa ambayo unaweza kuwa nayo

00:00:53,680 --> 00:00:55,520

kusikia kabla

00:00:55,520 --> 00:00:59,120

Ni tawi jipya la kuvutia la hisabati linaloitwa Nadharia ya Mchezo

00:00:59,120 --> 00:01:02,559

Ambapo unapofanya uchaguzi wako pia unahitaji kuzingatia

00:01:02,559 --> 00:01:05,439

Chaguo la mchezaji mwingine

00:01:05,439 --> 00:01:10,950

Hii inamaanisha kuwa chaguzi zako zinategemeana

00:01:10,950 --> 00:01:14,080

Kwa hivyo unachohitaji leo: mshirika wa kucheza naye mchezo,

00:01:14,080 --> 00:01:17,759

kadi mbili ndogo kila moja ikisema gawanya na uibe,

00:01:17,759 --> 00:01:21,270

na hizi zinaweza kuwa vipande vidogo vya karatasi

00:01:21,270 --> 00:01:23,680

na hatimaye kitu cha kuhesabu alama nacho

00:01:23,680 --> 00:01:28,240

Ikiwa una ishara au sarafu au kitu kama hicho,

00:01:28,240 --> 00:01:29,990

Hiyo itakuwa nzuri,

00:01:29,990 --> 00:01:34,550

lakini kama sivyo unaweza tu kutumia kalamu na karatasi kuandika

alama

00:01:34,550 --> 00:01:38,560

Hivyo hii ni nini mchezo inaonekana na meza hii inaitwa tumbo

00:01:38,560 --> 00:01:46,720

Katika mchezo huo kuna pointi mbili za kushinda lakini nani atashinda kile kinachoamuliwa na uchaguzi wa wachezaji

00:01:46,720 --> 00:01:50,000

Tuna wachezaji wetu wawili kushoto na juu

00:01:50,000 --> 00:01:53,200

Mchezaji mwekundu na mchezaji wa bluu

00:01:53,200 --> 00:02:00,560

kila mchezaji ana chaguo mbili zilizoonyeshwa karibu nao, kugawanyika au kuiba

00:02:00,560 --> 00:02:07,040

Kwa kuwa wachezaji wawili wana chaguo mbili kila mmoja kuna matokeo manne kwa jumla

00:02:07,040 --> 00:02:10,239

na zote zimeonyeshwa kwenye jedwali katika kila sehemu

00:02:10,239 --> 00:02:13,760

Nambari nyekundu ni idadi ya pointi alizoshinda mchezaji mwekundu

00:02:13,760 --> 00:02:18,319

na nambari ya bluu ni nambari ya alama alizoshinda mchezaji wa bluu

00:02:18,319 --> 00:02:21,110

kwa mfano

00:02:21,110 --> 00:02:24,560

ikiwa wachezaji wote wawili watachagua kugawanyika

00:02:24,560 --> 00:02:28,400

tungeishia na matokeo ya juu kushoto

00:02:28,400 --> 00:02:35,430

na wachezaji wangegawanya pointi mbili ili kupata pointi moja kila mmoja

00:02:35,430 --> 00:02:39,920

Walakini ikiwa mchezaji nyekundu alitaka kugawanyika

00:02:39,920 --> 00:02:48,319

Lakini mchezaji wa bluu alichagua kuiba mchezaji wa bluu angeiba pointi ya mchezaji nyekundu na kupata pointi mbili

00:02:48,319 --> 00:02:52,879

huku mchezaji mwekundu hashindi chochote

00:02:52,879 --> 00:03:00,800

Kinyume chake hutokea ikiwa mchezaji wa bluu atagawanyika na mchezaji nyekundu anaiba

00:03:00,800 --> 00:03:06,080

lakini ikiwa wachezaji wote wawili watajaribu na kuiba

00:03:06,080 --> 00:03:14,560

haifanyi kazi na hakuna anayeshinda pointi hivyo wachezaji wote wawili wanaishia bila chochote

00:03:14,560 --> 00:03:21,910

Sasa ni zamu yako jitayarishe kucheza mgawanyiko au kuiba na mwenzako

00:03:21,910 --> 00:03:27,190

Kwanza zungumza na mwenza wako kwa dakika kadhaa kuhusu chaguo utakalofanya

00:03:27,190 --> 00:03:33,750

Kumbuka, mtu aliye na pointi nyingi hushinda

00:03:33,750 --> 00:03:37,040

Unaruhusiwa kumdanganya mwenzako kisha kwa siri chagua kugawanyika au kuiba

00:03:37,040 --> 00:03:42,959

na weka kadi uliyochagua kifudifudi ili mwenzako asiione

00:03:42,959 --> 00:03:49,840

Hatimaye onyesha chaguo zako na ufanyie kazi alama zako

00:03:49,840 --> 00:03:57,350

Cheza mchezo mara moja na mwenzi wako

00:03:57,350 --> 00:03:57,360

Sitisha video sasa

00:03:57,360 --> 00:03:59,670

Iliendaje?

00:03:59,670 --> 00:04:01,599

Je, umepata idadi ya pointi ulizokuwa unazitarajia?

00:04:01,599 --> 00:04:04,959

wewe na mwenzako mliambiana ukweli?

00:04:04,959 --> 00:04:12,390

Hebu tufikirie kwa nini matokeo yanaweza kuwa tofauti na ulivyotarajia

00:04:12,390 --> 00:04:16,000

Fikiria wewe ni mchezaji nyekundu mpinzani wako

00:04:16,000 --> 00:04:25,510

Mchezaji wa bluu ana chaguo mbili za kugawanyika au kuiba

00:04:25,510 --> 00:04:25,520

ikiwa bluu inachagua kugawanyika

00:04:25,520 --> 00:04:30,160

unaweza kuchagua kugawanyika na kushinda pointi moja

00:04:30,160 --> 00:04:35,189

au unaweza kuchagua kuiba na kushinda pointi mbili

00:04:35,189 --> 00:04:41,189

pointi mbili ni bora kuliko moja hivyo ungependa kuchagua kuiba

00:04:41,189 --> 00:04:49,189

Je, ikiwa mchezaji wa bluu atachagua kuiba?

00:04:49,189 --> 00:04:53,440

Ukichagua kugawanya utapata sifuri na ukichagua kuiba pia utapata sifuri

00:04:53,440 --> 00:04:56,710

Kwa hivyo haijalishi unachagua nini

00:04:56,710 --> 00:05:03,990

Lakini hebu tuchukulie unapendelea kuiba ili usimpe mpinzani wako pointi zozote

00:05:03,990 --> 00:05:07,440

Kama tulivyoona, haijalishi mpinzani wako anafanya nini

00:05:07,440 --> 00:05:16,870

mgawanyiko kamwe sio chaguo bora zaidi hii inamaanisha kuiba inaitwa mkakati dhaifu

00:05:16,870 --> 00:05:27,830

Kwa kuwa huu ni mchezo wa chuma wa ulinganifu pia hutawala kwa njia dhaifu kwa kicheza bluu

00:05:27,830 --> 00:05:34,870

Tumethibitisha kwamba inaleta maana kwa wachezaji wote wawili kuchagua kuiba

00:05:34,870 --> 00:05:41,039

Kwa hivyo matokeo ya chuma ya chuma hujulikana kama usawa wa nash

00:05:41,039 --> 00:05:54,800

lakini angalia matrix matokeo ya mgawanyiko wa mgawanyiko ni bora kwa wachezaji wote wawili kwani wote wanapata alama moja badala ya sifuri

00:05:54,800 --> 00:06:04,469

Hii inamaanisha kuwa usawa wa nash sio suluhisho bora, matokeo ya kushangaza

00:06:04,469 --> 00:06:07,520

Sasa tunajua nini kifanyike kwa mchezo mmoja

00:06:07,520 --> 00:06:13,990

Lakini je, matokeo haya yanashikilia ikiwa tutacheza mchezo mara nyingi

dhidi ya mchezaji huyo huyo

00:06:13,990 --> 00:06:18,400

Anza kufunga kutoka sifuri na ucheze mchezo mara kumi mfululizo

00:06:18,400 --> 00:06:20,720

na cheza mchezo huo mara kumi mfululizo na mwenzako

00:06:20,720 --> 00:06:23,029

Je, mkakati wako unabadilika?

00:06:23,029 --> 00:06:23,039

Sasa unajua

00:06:23,039 --> 00:06:29,110

Utakuwa unacheza mpinzani sawa tena

00:06:29,110 --> 00:06:33,520

Cheza mchezo mara 10 na mwenzi sawa

00:06:33,520 --> 00:06:39,270

Sitisha video sasa

00:06:39,270 --> 00:06:39,280

[SItisha]

00:06:39,280 --> 00:06:42,960

Je, umeweza kupata pointi zaidi ya mpinzani wako?

00:06:42,960 --> 00:06:47,680

Mchezo unaorudiwa kama ule ambao umecheza hivi punde ni mgumu zaidi

00:06:47,680 --> 00:06:52,240

Kwa sababu uamuzi wako hauathiriwi tu na mawasiliano yako na mwenza wako

00:06:52,240 --> 00:06:59,189

Katika raundi hii lakini pia yale yaliyotokea katika raundi zilizopita

00:06:59,189 --> 00:06:59,199

kwa mfano

00:06:59,199 --> 00:07:04,629

Unaweza kumwamini mwenzi wako kidogo ikiwa aliiba katika raundi ya awali ambayo inaweza kukufanya

00:07:04,629 --> 00:07:07,199

uwezekano mkubwa wa kuiba katika raundi hii

00:07:07,199 --> 00:07:10,230

Kwa ujumla,

00:07:10,230 --> 00:07:14,000

Kadiri mchezo unavyorudiwa ndivyo unavyoweza kushirikiana na mpinzani wako

00:07:14,000 --> 00:07:18,400

Kwa sababu wanaweza kukuadhibu katika raundi zijazo usipofanya hivyo

00:07:18,400 --> 00:07:22,400

Kwa kutumia mantiki sawa, ikiwa unajua hakuna raundi nyingi zilizobaki

00:07:22,400 --> 00:07:31,520

Huenda ukajaribiwa zaidi kuiba kwa sababu mpinzani wako ana muda mchache wa kulipiza kisasi

00:07:31,520 --> 00:07:36,479

Kama huu ni mchezo maarufu sana wananadharia wameunda mikakati mingi

00:07:36,479 --> 00:07:39,589

ambayo tunaweza kutumia wakati wa kucheza

00:07:39,589 --> 00:07:39,599

kwa mfano

00:07:39,599 --> 00:07:44,479

Unaweza kushirikiana kila wakati, ikimaanisha kuchagua mgawanyiko kila wakati

00:07:44,479 --> 00:07:47,680

au unaweza kucheza kuiba kila wakati

00:07:47,680 --> 00:07:50,960

Unaweza kuchagua kunakili kile mpinzani wako alifanya katika hatua yao ya mwisho

00:07:50,960 --> 00:07:55,199

wakati mwingine hujulikana kama tit kwa tat au copycat

00:07:55,199 --> 00:08:04,160

Grim trigger ni pale unapocheza mgawanyiko lakini mpinzani wako akicheza kuiba mara moja tu, unamwadhibu kwa kucheza kuiba kwa muda wote uliosalia wa mchezo

00:08:04,160 --> 00:08:09,280

Unaweza hata kuamua kuchagua nasibu kila wakati kwa kugeuza sarafu

00:08:09,280 --> 00:08:15,670

Je, unadhani ni mkakati gani bora zaidi?

00:08:15,670 --> 00:08:17,280

Jaribu kucheza raundi tano ukitumia moja ya mikakati iliyoorodheshwa

00:08:17,280 --> 00:08:21,919

na uone kitakachotokea ikiwa unaweza kubadilishana washirika wakati huu

00:08:21,919 --> 00:08:28,790

Kisha chagua mkakati mwingine na ucheze raundi nyingine tano

00:08:28,790 --> 00:08:32,399

kucheza kwa kutumia mkakati

00:08:32,399 --> 00:08:37,269

Sitisha video sasa

00:08:37,269 --> 00:08:37,279

[SItisha]

00:08:37,279 --> 00:08:41,200

Kwa hivyo, ni mkakati gani ulikupa alama nyingi zaidi

00:08:41,200 --> 00:08:48,640

In 1980, Robert Axelrod made a tournament where he played 63 different strategies against each other

00:08:48,640 --> 00:08:53,360

To see which one came out on top

00:08:53,360 --> 00:08:58,630

and out of all of them it was tit for tat that won

00:08:58,630 --> 00:09:04,389

In general the most successful strategies were nice,

00:09:04,389 --> 00:09:09,350

Meaning they started off cooperating by playing split and forgiving

00:09:07,110 --> 00:09:11,040

Meaning that they wouldn't do what grim trigger does

00:09:11,040 --> 00:09:15,360

and fully stop cooperating once the opponent played steal

00:09:15,360 --> 00:09:23,760

I guess the fact that nice and forgiving strategies are the best

is a good sign for society

00:09:23,760 --> 00:09:27,670

and that's the end of this session

00:09:27,670 --> 00:09:30,790

if you enjoyed the topic, there's a very good website

00:09:30,790 --> 00:09:33,680

called nikki case's evolution of trust

00:09:33,680 --> 00:09:34,880

which goes into more detail

00:09:34,880 --> 00:09:41,920

Thank you and enjoy the rest of your Virtual Maths Camp.