



ãf±ãf¼ã,¿ãf%ãfªãf-ãf³ã,µãffã,«ãf¼ã«ã•Sã'ã,ãf±ãf¼ã,¿ã,¢ãfŠãfªã,¹ãf^

Description

ç¾ã»£ã,µãffã,«ãf¼ã«ã•Sã,,ã!ã€ãf"ãffãf•ã,Šã•®é•,æ%ã,,ãf™ãf³ãf•ã•®ç>£ç•£ã•ã•ã•Sãªã•ã€•ã€£æf å ±æ¹ç¥ã®ã€ã•ã,,ã¼ã¹ã,æ-°ã•Yãªã,ãf¼ãf-ãf-ã,ªãfªãf¼ã£ã•æ-ã,'ã!ãªã™ã,«é±è!ãªãœã•ã-ã!ã°éã-ã!ã•,ã,ã€,

ã•ã,£ã•£ã,µãffã,«ãf¼ãf±ãf¼ã,¿ã,¢ãfŠãfªã,¹ãf^ã•Sã•ã,ã,ã€,

ã¼¼ã,%ã•®ã½¿ã¼ã-ã€è¹ãªãªãf±ãf¼ã,¿ã,'ãŽé>¹ãf»ã¹æžã-ã€ãfãf¼ãfã•®ãã~ã•«è²ç£®ã™ã,,ã•Yã,,ã•®ã®è¹³çš,,ãªãªæ-æ•æ-™ã,'æ•ã¾ã™ã,ã"ã"ã"ã"ã,ã,ã€,

ã"ã•®ã½¹ã%²ã-ã€ç',70ã¹ã•®æ'ãªã,'æ£ã•ªæ-SãŽãšç"Yã¾ã,£ã€è¿ã¹æ-¥æœ-ã•Sã,,æ£¥é£Yã«ã•ã•®é±è!æ£Sã£èªè~ã•ã,£ã!ã•,ã,ã€,

ç¾ãœ"ã€ãf"ãf¼ãfãfãfãfã•®ã•é-£ã•®ã»ã"ã,"ã•®ã•®,ãf©ãf-ã£ã°,é-£ã•®ã,¢ãfŠãfªã,¹ãf^ã,'æ"ã™ã,¿çš¶æ³ã-ã€ã•ã•®ã¾¼¼ãªã,'æ~žçªã«ç%©èªžã£ã!ã•,ã,ã€,

ã-ã•ã-ã€ãf±ãf¼ã,¿ã,¢ãfŠãfªã,¹ãf^ã•®ãŽã¥ã-ã€ã~ã«æ-°ã-ã,,ã¼½è•ã,'è¿½ãŠã•™ã,ã»¥ã,Šã•®æ,,ã³ã,'æ£ã•ªæ£,

ã•ã,£ã-ã€é•ã¹ã€£çµ£é"ã"ã~ã€ã,'é±è!ã-ã!ã•ã•Yã,µãffã,«ãf¼æ-±ã£-ã•ã•®ã,,ã•®ã,,ã•®ã»ã¥ã•Sã•ã,ã,ã€,

ãf-ãfã•®,¢ãfŠãfªã,¹ãf^æ%ãŽã¥æ°ã•£ã€ã½"ã^ã-ç¾ã'ã•Sè»½ã,"ã~ã,%ã,£ã€ã•¾ãšç>£ç•£ã•®ã,,è¹³ã,'è-ã®šã-ã€ã¿é¼-£ã¿,ã,'ç-%ãã"ã"ããã,%ãšãã,ãªãã,£ã°ãªã,%ãªãã£ãYã"ã,,ã¹çµ£é"ã-è±¼¾çš,,ãšã•ã,ã,ã€,

ã-ãYã£ã£ã!ã€ã,¢ãfŠãfªã,¹ãf^ã•®çœYã•®æ£æ¹ã-ã€ãf±ãf¼ã,¿ã•®,ã«ç"ã^ã,'è!ãªããã,ã"ã"ãã•Sãªã•ã€ã•ã•®ç"ã"ã,ãfãf¼ãfã«ã-ãªã¥ã,£ãªãã€ã®Yè££ã«çš»ãªã»ã,ã"ã"ã"ã"ã,ã,ã€,

ã¼¼ã,%ã•ã~ãªã,æš€è¡"è€ã•Sã-ãªã•ã€ã,ãf©ãf-ã®æ,,æ£æ±°ãšãf-ãfã,,ã,¹ã,'ã,,è¹³ã•ã,%ãf±ãf¼ã,¿ã,ªãf³ãfã,©ãf¼ãfãf%ã,,ã"ãŽã•ã€æ-±ã£-çš,,ãªãª%é•®ã•®èš¼ãªãªã•®ã•Sã

,ã,ã€,

æœ-ãf-ãf-ãf¼ãf^ã•sã-ãeã,µãffã,«ãf¼ãf±ãf¼ã,¿ã,¢ãfSãf^ã,1ãf^ã•®ã½¹ã%²ã€•æ±,ã,ã,%,ã,£ã,ã,1ã,ãf«ã€•ã,ãf£ãf^ã,¢ãf'ã,1ã€•ã•ã-ã!ã°†æ¥æ€sã«ã•ã,ã!ã€•ã½²ã†ã-ã•®ã°<ã¾ã,ã°ãã•ã•ã•£ã,%,ç¶²ç¾ çš,,ã«è££èª-ã•™ã,ã€,

ç¬¬1ç« ã,¢ãfSãf^ã,1ãf^ã•®ã½¹ã%²ã•®è££ã%-ì¼šä,-æ,æ©ÿèf¹²ã•æ^!ç¥çš,,ã,µãf³ãf'ã,ãf^

1.1 ã,¢ãfSãf^ã,1ãf^ã•®ã»»ã™ì¼šãµšã²•ã«ã,ã•ÿã,ãfÿãffã,ãfSãf³

ã,µãffã,«ãf¼ãf±ãf¼ã,¿ã,¢ãfSãf^ã,1ãf^ã•®è•ã™ã-ãeãã•ã•ã,«èç!ã°ãf-ãf•ãf¼ãf^ã•®ã½²œæ^ã•«ç•™ã¾ã,%,ã•sã€•ã,ãf©ãf-ã®ãf•ãffãf^ãfœãf¼ãf«ã•ã-¶ã«ã•sã•ã,ã•ã,ã,%,ã,ã,ã,ã°é•¢ã«æ±ã•é-¢ã,žã™ã,ã€,

ã•ã•®æ'»ã•ç„ã²ã-ã°fã•ã€•ãf•ãf¼ãfã•®ç¶¶ã°%ãšã,æ¹ã°ã•ã•ã,%,æ"-ã^ã,ãµšã²ã•ã«ã,ã•ÿã,ãfÿãffã,ãfSãf³ã,æ•ã†ã€,

ã,»ãªæ¥ã™ã-ã»¥ã,ã®é€sã,šã•sã•ã,ã,ã€,

- æ^!èì“ãf»ãf'ãf•ã,©ãf¼ãfžãf³ã,1ã†æž•ì¼šä,æ,ã•ãªã,æ¥ã™ã-ãeèç!ã•ã,ãf^ãf-ãf¼ãf<ãf³ã,°ã®ãf±ãf¼ã,¿ã,ã†æž•ã-ã€ãf•ãf¼ãfã½²ã•®æ^!èì“æ”¹ã„ã„é•æ%œã€ã€ã•ã•ãf•ã,©ãf¼ãfžãf³ã,1ã•ã,šã«ç¹ã•ã,ã«ã“ã•ãsã•ã,ã<ã€,èªãf•ãf¼ãfã•®ã¼ã•ã¿ã,æœ€ãµšã£-ã™ã,ã•ã•ãsãªã•ã€ã°¾æ^!ç,æ%œã®ã¼±ç,1ã„ç%¹ã¾ã,æ'-ã„ã†°ã-ã€æ^!èì“çš,,ãªã„ª½²œ€sã,'çøª¿ã•™ã,ã•ÿã,ã•®æ•æj^ã,'èj£ã†ã€,
- æ€ªæ^ã•®ã°è²ã•ç®iç•¶i¼šGPSãf^ãf©ãffã,«ãf¼ãªã•ã•ã,%,ã¾ã-ã,%,ã,£ã,é•æ%œã•®èµ°èj£è•é•¢ã„é•ã°ã¼ã°!ã•ã„ã£ã•ÿãf±ãf¼ã,¿ã,ã†æž•ã-ã€ã•éžã°!ã•è²è•ã«ã„ã,æ€ªæ^ã,ã°æ,ãf»ã°é²ã™ã,ã€,ã•ã,£ã-é•æ%œã•®ã,³ãf³ãf±ã,£ã,ãfSãf³ã,æœ€é•ã•«¿ã•ãjã€ã,ãf¼ã,ãf³ã,'é€sã-ã!ã°%ã®sã-ã•ÿæ^!ãšã,'ç¶¶æ£ã•™ã,ã•ÿã,ã«ã,ã-æ¬ãª½²ã%²ã•sã•ã,ã<ã€,
- ãfªã,ãf«ãf¼ãf^ãfjãf³ãf~¹¼^ã,1ã,«ã,ãf±ã,£ãf³ã,°¹¼%j¼šã¾ã“æ¥ã•®ã,1ã,ã,ãf^ã•£æ£ã•ãµã,»è¹çš,,ãªèç•¾jã«ãšãã•ã€çµ±è“ãf±ãf¼ã,¿ã,æ'»ç””ã-ã!æœ%œæ»ãªé•æ%œã,ç™œæžãf»èç•¾¾jã™ã,ã€,ãf±ãf¼ã,¿ã«ãÿ°ã¥ã„ã•ÿã®è¹çš,,ãªè!-ç,1ã-ãeçš»ç±ã,ã,ã°ãsã•®çš,,çøªªæ„æ€æ±°ã®sã,'æ"-æ^ã•™ã,ã<ã€,
- ãf±ãf¼ã,¿ç®iç•¶i¼šãf-ãf-ã,¼ãf³ãf±ãf¼ã,ãfSãf³i¼šè†ãµšãªæ~ãf•ã„æ•°ã€ãf±ãf¼ã,¿ã,ãžè†ã-ã€ãf±ãf¼ã,¿ãf™ãf¼ã,1ãsç®iç•¶i¼šã™ã,ã€,ã•ã-ã!ã€ã•ã•ã®ã,ã•ã,%,æœ%œç»sãªæfã±ã,æš½²ã†°ã-ã€æ~ãf•ç•é†ã„ã†ã•ã,šã„ã™ã„ãf-ãf•ãf¼ãf^ã€ãf-ãf-ã,¼ãf³ãf±ãf¼ã,ãfSãf³è³±æ-ã,¹½œæ^ã-ã!ã€ãf•ãf¼ãfã•ã±æœ%œã•™ã,ã<ã€,

- ā-ēf̄ā, 3āfYāf¥āf̄ā, ±āf¼ā, āfSāf³¼šè©|ā~ā,,,é., æ%₀ā•
 ®āf‡āf¼ā, ĸā, āf|āf‡ā, £ā, ¢ā,,,āf•ā, īāf³ā•ā•ā«æ•ā¾ā—ā€•è¹æ^!ā½“é”“ā•®ā‘ā, Šā«è²¢çŒ®ā•
 ™ā, ā•ā“ā,,ā,ā, <ā€, āf‡āf¼ā, ĸā, ‘éēsā~ā|ā, māffā, «āf¼ā•®é āŠā, ā¼āā~ā, ā•ā“āšā€•
 āf•ā, īāf³ā, āf³ā, ²āf¼ā, āf|āf³āf^ā, ‘é«~ā, ā, <ā½²¹ā%₀²ā,,æ< ā† ā€,

1.2 ãf‡ãf¼ã,¿ã•ã,%æ,,•æ€•æ±ºå®šæ” æ’ã,ï¼šăĥ†æž•ă•®ãf•
ãfªãf¥ãf¼ãf•ă,šãf¼ãf³

ã,çãfŠăf^aã,¹ãf~ã®ä»•ä⁰<ã•ãĉã~ã«ãf†ãf¼ã,¿ã,é†ã,ã,<ã•ã'ãšã•-ã®£çũ—ã•ã„ã€,

ç”Yã•®ãf†ãf¼ã,¿ã•Ææ`ç•¥çš,,ã•è³†ç”£ã,ã•æ~†è•-ã™ã,ã•¼ã•šã•«ã•-ã•æã•£ã•Žé†ã†’ã†æž•
 â†’çµ±ã•â†’ã¼•é•â†’ã®Yë;£ã•ã•ã•,ã•†ã,é££ã•®ã¼;ã•£££ã•Ž-i¼ãf•ãfªãf¥ãf¼ãf•
 ã,šãf¼ãf³i¼%ã•£ã•ã•ã•ã•™ã,ã•£,

[illegible][illegible][illegible]

Jāf^aāf¹/₄ā,^oā•sā•-āēçš»ā•ā,,,é•,æ%◊ā•®ā,-āf¹/₄āf«ā/f€ā,|āf³ā,'èƒfæ ®ā™ā,ā•-āē•æ`|è|“äç®æ£ā•®ā•
ÿā,ā•«ä.Zā^ā,%◊ā,Æā,â®Yë^{3a}çš,ā^aæ™,é-“ā•-āā•sā•5ā^†ç¨‘â⁰|ā—ā•ā•ā•, ā€,

[illegible]

ã•ã•®æ°•âˆ†é–“ã•®æf å±æ•ä¾¼›ã•£ã•£•ã¾£ã•£ã•£•®è©|ã•£ã•£–ã, 'å±§ã•£•ã•|ã•¾ã•™ã, <ã•£–èf½æ£§ã
£ã•£, <ã•£,

[illegible]

1.3 ã,¢ãƒŠãƒªã,¹ãƒª¨ã¨¨ã¨,ã¨†ã¨¨ã¨

®çç»è³å®¶¶¼šã,³ăfŸăf¥ăfăă,±ăf¼ă,ăfšăf³ă•®é‡•è•æ€§

[illegible]
$$\tilde{a} \cdot \tilde{a} \cdot \textcircled{\scriptsize R} \tilde{a}, \varpi \tilde{a} f^3 \tilde{a} f' \tilde{a}, -\tilde{a} f^{\wedge} \tilde{a}, ' \ae \pm {}^0 \mathring{a} \textcircled{\scriptsize R} \check{s} \tilde{a} \mp \tilde{a}' \tilde{a}, < \tilde{a} \cdot \textcircled{\scriptsize R} \tilde{a} \cdot - \tilde{a} \epsilon \tilde{a}, {}^3 \tilde{a} f \ddot{Y} \tilde{a} f \mp \tilde{a} f < \tilde{a}, \pm \tilde{a} f^{1/4} \tilde{a}, \cdot \tilde{a} f \S \tilde{a} f^3 \epsilon f^{1/2} \mathring{S} \tilde{a} \cdot \S \tilde{a} \cdot \tilde{a}, < \tilde{a} \epsilon,$$

- **āf†āf¼ā,ġāˆtæž•ā•çµ±èˆˆā!¼šçµ±èˆˆā!ā€•āf†āf¼ā,ġāfžā,āf<āf³ā,°ā€•æ©ÿæ¢•ā!çġˆā•**
 ®āÿ°ç•žçÿ¥èˆˆā•ā€ā,āfšāfāā,1āfˆā•®ā€•èèfā•®ā 1ā¹¹ā,ˆā•ā•™ā€,āf†āf¼ā,ġā,ˆè«-ç•†çš,,ā•
 «æ•ç•†ā—ā€•ā••éġEç,1ā,,,æˆ1ā—,ç,1ā,ˆæš½ā†ā°ā•™ā,«èf½āšˆā•āġ éˆāšā•ā,< ā€,
- **āf—āfā,°āf©āfÿāf³ā,°ā•ITā,1ā,āf«!¼šç°1ā•«è†ˆā•šā•āf†āf¼ā,ġā,ˆæ%±ā•†ā,šā•šā€•**
 Pythonā,,,Rāˆā•,ā•£ā•ÿāf—āfā,°āf©āfÿāf³ā,°èˆ€è²žā€•ā•ā—ā!āf†āf¼ā,ġāf™āf¼ā,1ā,ˆæ“•
 à½œā•™ā,«ā•ÿā,ā•®SQLā•®çÿ¥èˆˆā•ā€ā,,ā•ā,,,æˆ™æ°-è£ ā,™āˆā•ā,šā•ā•ā•ā,ā,< ā€,ā•
 “ā,£ā,°ā•ā•®ā,1ā,āf«ā•ā€āf†āf¼ā,ġā†!ç•†ā•®è†āā•ā£—ā,,,çç-è†āā•®ā†æž•
 āfāf†āf†āf«æšçç°%ā,ˆāˆèf½āˆā•™ā,«ā€,
- **Blāˆā•è!-ā£-āf,,āf¼āf«!¼šTableauā,,,Power Blā•®ā,ˆā•†ā•āf“ā,āf•**
 ā,1ā,āf³āf†āfāā,ā,šāf³ā,1¼ˆBl¼%āf,,āf¼āf«ā,ˆā½ġā•,ā•ā•ā—ā€•ā†æž•çµ•
 æžœā,çˆæ,,ÿçš,,ā•šā†ā•ā,šā,,,ā•™ā•,āf€āffā,āf¥āfœāf¼āf%ā,,,āf-āf•āf¼āfˆā•«ā¾āˆā•,
 ā,«èf½āšˆā•ā€çç£ç£ā,,,é•,æ%•ā•ā•®ā††æ»ˆā•ā,³āfÿāf¥āf<ā,±āf¼ā,āfšāf³ā•«ā,•āˆæ¬ āšā•
 ,ā,< ā€,

ã•ã,Ǝã,%ã•®ã,1ã,ãƒ«ã•Ǝã®Ýëš•ã•®ç•¾ã´ã•šã•©ã•®ã,^ã•†ã•«æ´»ç´´ã•ã,Ǝã,ã•«ã,'ã€•ã»¥ä,ã•®è´´ã•
«ã•¾ã•ã,ã,ã€,

$$\tilde{a}, {}^1\tilde{a}, \tilde{a}f \ll \tilde{a}f \gg \tilde{a}f, \tilde{a}f^{1/4}\tilde{a}f \ll$$

æ̃ âf̂â†æž•ă,½ăf̂âf̂ (Hudl Sportscode, Nacsport)

Python (Pandas, Matplotlib, scikit-learn)

R

SQL

ā,μāffā,«āf¼ā,āfšāfāf+ā,£ā,-ā,1ā
 «
 ā-šā-ā,«æ'»ç'''ā¾ā
 æ±,ā,•
 ā,%ā,£ā,çç'ç†
 è©!ā•æ~āf•ā•ā,ā,°ā»~ā•ā€•
 āf—āf-āf¼ā•ā•ā†ā,šā†°ā—ā€•
 æ^|è|“çš,,ā•āf'ā,çāf¼āfšā•ā•ā†āæž•
 ā€•é•,æ%«ā•,ā•āf•ā,£āf¼āf%āf•
 āffā,-ç'''ā«ç'''»ā½œæ•
 āf†āf¼ā,çā•ā%«ā†|ç•
 †āf»āš ā•¥ā€•StatsBombç%ā•
 @JSONāf†āf¼ā,çā•ā•£æž•ā€•
 ç«-è†°ā•ā,1ā,çāffāf,,ā-è|-ā£-ā€
 āf'ā,1æ^āšŸç¢°çž†¼\$×Pass\$
)ā,,,ā,āf¼āf«æœŸā¾ā ā€¼¼\$×G\$
)ā•ā•©ā•ā°œ-āfçāf†āf«æšç%-o

çµ±è¨§£æž•ä¸ä¸†ä¸¼ä¸,ç¸
 ¨è|¸â¸E¸â¸Pythonâ¸¸â¸Eæ§¸ã¸
 «ä¨æ¸,¸ä¸†ä¸†ä¸«ä¸®æ§¸ç¨â¸,ä¸,ç¸¸
 |èì"ç"ç©â¸®â¸¨é†žã¸§ã¸,â¸°fã¸
 â¸©ç¨"ã¸ã¸,Eã¸,
 ä¸†ä¸¼ä¸,ç¸ä¸™ä¸¼ä¸,ä¸«ä¸,â¸
 ®ä¸†ä¸¼ä¸,ç¸§½â¸¨â¸¸â¸®§é†¸ã¸
 ®è©â¸ä¸†ä¸¼ä¸,ç¸,,é¸ ä¸,ç¸¸
 ,æä¸†ä¸¼ä¸,ç¸®ç®ç¸†ä¸»æ¸
 ä½æ¸

ã,¹ã,ãf«ãf»ãf„ãf¼ãf«

ã,µãffã.«ãf¼ã,¢ãfŠãfaãftã,£ã,—ã,¹ã
•« æ±,ã,
ã,%ã,Ǝã,çç'ç†Y

ã•Šã‘ã,æ´»ç””ä¾<

å„ç¨®ãf‡ãf¼ã,¿ã•®çµ±âˆ•ã€•
ã,¤ãf³ã,¿ãf©ã,—ãf†ã,£ãf—ã
ªãf€ãffã,—ãf¥ãfoeãf¼ãf%ã• ä,ćś
®ä½œæ^•ã€•ç>£ç•£ã,,çµƎă—¶é™£ã.
,ã•®ă®šăž<ãf–ãf•ãf¼ãf^æ•ă†°
ă^†æž•çµ•æžoeã,'ã,¹ãf^ãf¼ãfaãf¼ã•
¨ã—ã|æ§<æ^•ã—ã€ãf•
ãf—ãf–ã,¼ãf³ãf†ãf¼ã,—ãf§ãf³ã,½ãf•ãf^ãf¼ãf ãfŸãf¼ãf†ã,£ãf³ã,°ã•
(PowerPoint, Keynote) §ç™ºëj¨ã€,ã,¢ãf<ãfiãf¼ã,—ãf§ãf³ç-
%ã,'æ´»ç””ã—ã€•ă†ã•ã,šã,,ã•™ã•
•ã,'è¿½æ±,

ăŸºæœ¬çš,,ãªãf‡ãf¼ã,¿é>tè¨ã€•
çºjæ~“çš,,ãªã,°ãf©ãf•ă½œæ^•ã€•
ã,¢ãf%ãfãfã,—ãªă†æž•ã€,è¿
é€Ÿãªă¾ă¿œăƎæ±,ã,
ã,%ã,Ǝã,ă´é•¢ã•§æ´»ç””

Excel

default watermark

ăŸºç²Ž

2.2 å•†å£²é•“å·¼šăf—ăf©ăffăf^ăf•ă,©ăf¼ăfă€•ăf—ăfăf•ă,ăăfă€ăf¼ă€•ăf†ăf¼ă,ăă,ăă,ăăf—

ç·¾ä»£ã•®ã, mãf fã, «ãf¼ã¹æž•ã•¯ãë° , é—€çš, ãªã, ½ãf•ãf~ã, !ã, šã, ¢ã•é«~ã°•è³ã•ãf†ãf¼ã, ĺã, 'æ••
ã¾ã•™ã, «ã¼ã•æ¥ã•®ã, ¨ã, ³ã, ã, 1ãf†ãfãã«æ”ã^ã, %ã, £ã•ã•, ã, <ã€,

- [illegible]

„ã, < ã€,

æ·±æŽ̃ã,Šĩ¼šStatsBomb 360é•©ă'½

StatsBomb 360ã•ã€ã¼“æ¥ã•®ã•,ãƒf™ãƒ³ãƒˆãƒ†ãƒ¼ã„,ã•'1ãº•ã•,ã•è!ã•
™ãƒˆãƒ©ãƒ€ã•,ãƒfã•,ãƒf•ãƒˆã•,ã•,ã•ÿã•,ã•ã—ã•ÿã€,

ā•ā,⌈ā•āēā•ā,⌈ā•ā•ā•se«~à¼;ā•āf~āf©āffā,āf³ā,°ā,ā,1āf†āf ā•sā—ā•ā¼—ā,‰ā,⌈ā•ā•ā•£ā•
 ÿæ^|è|“çš,āf»ç©°é—“çš,ā•ā,³āf³āf†ā,ā,1āf~ā,′āē•ā,ρāf™āf³āf~āf†āf¼ā,çā•«ā»~ā,žā•™ā,ā,ā,ā•ā•sā•
 ,ā,ā āē,

[illegible]

ā•ā•®è¿½åŠ æf å ±ā•«ā, ā, Šāē•āēŒāf©ā, ¢āf³ā, 'ç ´ā, ¢āf'ā, 1āē•ā•®ç%01ā®šāē•ā, 1āfšāf¼ā, 1ā•
 šāfœāf¼āf«ā, ā—ā•ā•Ÿāžæ•°ā•®ā®šé†•āŒ—āē•āf—āf—āffā, āf£āf¼ā, ¢āšā•®āf'ā, 1é•, æšžā•
 ®è©•ä¾jā•ā•©āē•50ā»¥ā, Šā•®æ—°ā•Ÿā•æŒ†æ™™ā•®ā%µā†°ā•Œā•°èf½ā«ā•ā•£ā•Ÿ āē,

$\tilde{a} \cdot \tilde{a}, \in \tilde{a} \ll \tilde{a}, \hat{\tilde{a}}, \tilde{S}\tilde{a} \notin \tilde{a} \cdot \tilde{a} \cdot \ll f - \tilde{a}f - \tilde{a}f^{1/4} \tilde{a} \cdot \in \tilde{a}^{\wedge} \tilde{a} S\tilde{Y}\tilde{a} - \tilde{a} \cdot \tilde{Y}\tilde{a} \cdot \tilde{a} \cdot \tilde{a} \cdot \tilde{a} \cdot \tilde{a} \cdot \tilde{S}\tilde{a} \cdot \tilde{a} \cdot \tilde{a} \cdot$

[illegible]

ā•ā•⊗æš€è|‘é•©æ-°ā•ā̃ā,¢āfšāf^aā,¹āf[^]ā¿—æœ>è€ ā•«ā•ā•£ā!ā^o£ā•ā•⊗¿,ā•ā•
TMā,ā¹½±éÿ¿ā,ā,ā•ÿā,%ā—ā!ā•,ā,ā€

ä,€ã•ã•ã•StatsBombã•ã•©ã•£æ•ä¾ã•TMã•,é«~å••è³ªã•ªã•,ªf¼ãf—ãf³ãf±ãf¼ã,¿ã•®ã~åœ~ã•
«ã~,ã,Sã£•èªªã•Sã~,ãf—ãfãf~ãfTMãf«ã•®ãf±ãf¼ã,¿ã•«ã,£ã,~ã»,ã,¹ã—ã£•ãf•
ãf¼ãf~ãf•ã,©ãfªã,ªã,'æSç~%õãSã•ã,ã,ã+ã«ãªã£ã•Yã££ã;ã ¥ã•®æ°•ã.»ã£—ã£•ã•Sã•ã,ã,<ã£,

ä, €æ—1ä•\$ä€•360äƒ†äƒ^{1/4}ä, çä•®ä, ^ä•†ä•è□±é'ä•æƒ ä ±ä, 'æœ€äâ□\$é™•ä•«æ'»ç'''ä•™ä, <ä•ÿä, ä•«ä—ä€
Pythonä,,Rä•ä,,ä•£ä•Ý€«~ä'ä•äƒ—äƒä,,äƒ©äƒÿäƒ³ä,,ä,1ä,äƒ«ä•£ä,,ä•—æ¬ä~ä•ä, \$ä€•ä€£ä•
"è¶\$ä€\$ä•, ä•®æ\$€èj«ç\$,,äƒ•äƒ^{1/4}äƒ%äƒ«ä€ä•—ä, €ä—ä, é«~ä•¾ä•£ä¶ä,,ä,,ä€,

[illegible]

2.3 ãf•ãffãf^ãfoeãf¹¼ãf«ã•®æ€•è€fi¹¼šãf%ãfjã,ªãf³çÿ¥è~ã•
 Œæ±ºª®šçš,,ãªè|ªªãªªªª,ç•†ç”±

æSĩëi“çš,,ã^aã,1ã,ãf«ã⁻ã,ã•ã•¾ã•šé“ã •ã•šã•ã,šã€ã•ã•ã•®é“ã •ã,æ£ã—ã•ã½çã•†ã•ÿã,ã•
®ãf-ãf³ã,ã“ã•ãã,ã•®ã•£ã€ã,ũãfãã,«ãf¼ã“ã,ã†ç«¶æSĩã•ã•®æ•±ã,ç†èš£ãšãã,ã,ã€

ä•ä—ä•!ä€ä•ä•®æˆ•æžœç%©i¼ˆäˆ†æž•ä,³äƒ¼äƒ%ä€ä•—è!—äƎ—ä,°äƒ©äƒ•ä€èƒä—ÿäƒ—äƒ•
 äƒ¼äƒˆä•ä•©i¼%©ä,è†äè°«ä•®äƒ—äƒä,°ä,,,GitHubä€•X¼ˆæ—STwitteri¼%©ä•ä•©ä•
 ®äƒ—äƒ©äƒƒäƒˆäƒ•ä,©äƒ¼äƒ ä•šä —é—ä•™ä,ä•“ä•ä•šä€ä,¹ä,äƒ«ä•æƒ ç†±ä,ä•ä½²“çš,ä•
 «ä,¢äƒ”äƒ¼äƒ«ä•™ä,ä•ä•ä•ä•ä•ä•—èƒ½šä•ä,« ä€,

ç¬¬4ç« ã,°ãfãf¹/₄ãf•ãf«ã,¢ãf^aãf¹/₄ãfŠİ¹/₄šă,ă 'ăŠ,ă|ă€•ă ±é ¬ă€•ă
•ă—ă•|æœ^aæ•¥ă±•æœ›

4.1 å½éš,çš,,ãªé†ç””å,å ´¼šæ”è¼fâ†æž

ā,μāffā,«āf¹/₄ā,čāfŠāf^aā,1āf^ˆā•®ā¹/₂1ā[°]0²ā,,,æŽič^ˆāf—āfā,»ā,¹ā•āā[°]1/₂ā,,,āf^aāf¹/₄ā,[°]ā•«ā,ˆā•Ēā•ā[°]ā
 •ā•č[°]ā^aā,<ā€,

ã,°ãfãf¹¼ãf•ãf«ãªã,ãf£ãfªã,¢ã,'ç»®æ£±ã•™ã•®ã§ã•,ã,£ã•ã£•ã•,ã,ã'ã•®ç%º¹æ£§ã,'ç•†è§£ã•™ã,ã•
“ã”ã•£ä,•ã•¯æ¬ã§ã•,ã,ã£,

- [illegible]

[illegible]

äf%ã.ðäf.,ä•šã•-äf•ä.;äf³ä•ä•@äºæµ•ä•@ä´ä,ä^©ç••ä—ä•ÿé•žä -ä¼•ä•šç;´æžŸçš,ä•ä,çäf—äf-
 äf¼äf•ä•£ä€•é©šä•ä•»ä•©äš¹æžœçš,ä•šã•ä•£ä•ÿä€,

ã,1ãfšã,ãf³ã•šã•-ãëë-ëèàžèf1/2ãšã•ã•ã€ãºçš,,ã•ã,³ãf•ã,-ã,ãfšãf³æšç-‰ã€É†•è!-ã•ã,£ã,<ã€,

ã,çãfŠãf^aã,¹ãf[^]ãç—æœ>è€ ã«ã•ã•£ã|ã€ã•ã“ã,£ã⁻éçè|ã[•]çç^oã”tã,'ã.Žã[^]ã,ã€,

ā•ā•³⁄₄ā, Šāēā•ā• — æœ>ā•™ā, <āf•āf¹⁄₄āf ā, 'ç "ç©¶ā•™ā, <ā•®ā••ā•ēā•ā•ā, %ā•, āē•ā•ā•®āfāf¹⁄₄ā, °ā•
 ®āēēæžīç" æ—†āē—āēā, āfāā, māf¹⁄₄āf•ā•™ā, <ā•"ā•ā•ēāēā, āfēāfāā, çā, ā•†ā, Šāç<ā•ā, Šā•
 šæ±°ā®šçš, ā•āē!ā• ā•ā•ā, Šā•†ā, <ā•®ā•šā•, ā, <āē,

4.2 å¹/₂¹å%º²ã•®æœªæ•¥ï¹¼šå°,é–€å†‡åŒ–ã••è‡ªå••åŒ–

ã,µãf fã,«ãf¼ã,¢ãfŠãfã,1ãf^ã•@ã½1ã%ã²ã•é™çš,,ã•ãã,,ã•@ã•šã•ããã•ã€•Alã,,æ©ÿæ¢°ã!ç:ã•
®é€²ã£—ã•ã•ã,,ã•«ã€•ã,ã,šé«~ã°!ã•ã°,é—€ã^tã£—ã•®æ™,ã»£ã,ã•ã•ã•ã£ã!ã,,ã,<ã€,

360ãf+ãf¼ã,ã•@ã,ã•tã•è•é>'ãããf+ãf¼ã,ã,»ãf fãf^ã,,ã€•OBV¼ã,ããf³ãfœãf¼ãf«ãf•
ãfããf¥ãf¼¼ã%ã•@ã,ã•tã•é«~ã°!ã•è©•ã¾ãf¢ãf+ãf«ã,ã½2ãã,,ã•ã•ã•™ã•ÿã,ã•«ã•ã€ã,ã,šæ±ãã•
,,æš€è|“çš,,ã°,é—€æ€šã•£æ±,ã,ã,%ã,£ã,<ã€,

ã•ã•®æµã,£ã•®ã,ã•šã€ã,¢ãfŠãfã,1ãf^ã•ã,,ã•tè•æ¥ã•ã€ã•šã•ã•ã°£ã•ã•®ç•ã•ãã,ã€•

ã—ã•ã•—ç>,ã°è£œã®£çš,,ã•ãã,ãf£ãfãã,¢ãf^ãf©ãf fã,ã,ã•ã^tã²ã•ã—ã•ã•ã•ã,ã,<ã€,

ã,£ã•ã•ã•ã€**ã€£ãf“ãf+ã,ãã,¢ãfŠãfã,1ãf^ã€**ã•ã,,ã½1ã•ã,ã½21ã%ã²ã•šã•ã,ã,<ã€,

ã½2¼ãã,%ã•ã•ãfãf¼ãfã•ã°,ã•£ã—ã€•ãf^ãf—ãf¼ãf<ãf³ã,ã°,ãf©ã,ãf³ãf%ãã,,è©!ã•ã•®ãf™ãf³ãfã•ã•
šæ»ã•ã•ã•™ãã,ã€,

Hudl Sportscodeã•ã•©ã•®æ~ãf•ãf,,ãf¼ãf«ã,éštã½2ãã—ã€•æ^è|“çš,,ã•ãç:»è³èf½ãšãã•ã•è¶šãã—ãã
•ÿã,ããfÿãf¥ãf<ã,±ãf¼ãã,ãfšãf³èf½ãšã,æ!ã™™ã•«ã€•ç>£ç£ãã,,é,æ%ãã•ã^tæž¥ã«é£æ°ã•™ãã,ã€,

ã½2¼ãã,%ã•@ã¾ã!ã€ã•ã•ããf+ãf¼ãã,ã,ç¾ãã•ã•®æ,,æ€•æ±°ã®šã«ç>æž¥çµã•ã•ã•ãã,ã€£çµ±ãã•
^ãšã€ã•ã•ãã,ã,<ã€,

ã,ã•tã,£ã•ã•ã•ã€**ã€£ãf+ãf¼ãã,ã,µã,ãã,ãf³ãf+ã,£ã,1ãf^ã€**ã•ã½1ã•ã,ã½21ã%ã²ã•šã•ã,ã,<ã€,

ã½2¼ãã,%ã•ã•ã•Pythonã,,Rã€•SQLã,'è±ãœ~ã•«~ã•ã,šã€•StatsBomb 360ã•@ã,ã•tã•è•é>'ã•
ããf+ãf¼ãã,ã,èš£æžã•ã—ã•!ã€•æ—ã•ÿã•ã°æ,ãf¢ãf+ãf«ã,,è©•ã¾ã!æ£æ™™ã,é—ç™°ã•™ãã,ã€,

ã½2¼ãã,%ã•@è•ã^ã•ã•ãã,ãf©ãf—ã•®æœ—ç¾¾ãã,,ãf+ãf¼ãã,ããf—ãfãfã•,ããf£ãf¼ã€•ãf!ãf+ã,£ã,¢ã¼ã•
æ¥ã•®ã,ããfã,£ã,1ã•šãã,ã,šã€•ã•ã•®ã¾ã!ã€ã•ã•ã^tæžæ%ã•æ³ã•ã•®ã€£é•©æ—ã€ã•ã•ãã,ã,<ã€,

ã•ã•®ã°£ã•ã•®ã½21ã%ã²ã•ã•æ±,ã,ã,%ã,£ã,<ã,1ããf«ã,»ãf fãf^ã€•ãš^ãf•ç°ã¢fã€ã•ã•ã—ã•!ã•šã•ã•
ã,%ãã•ã•ã^tè¬ã½2“ç³»ã,,ç•°ãããã,ã€,

ã,¢ãfŠãfã,1ãf^ãç—æœ»è€ã•ã•èè±è°«ã•®è~ã³ã•é©æ€šã•£ã•©ã•ã!ãã,%ã•®é•ã•«ã•ãã,ã•®ãã•
<ã,'è|æ¥µãã,ã,ãç è|ã•£ãã,ã,<ã€,

ãf”ãf fãfã•®ãã•ã•ã•šæ^è|“ã,'èãžã,šã•ÿãã,ã•®ãã€ã•ã•ã,£ã•ã,,Jupyter Notebookã,šã•šæ—ã•ÿãã•
°çÿ¥è|ã,'æž£æ±,ã—ã•ÿãã,ã•®ãã€ã€,

ã•ã•®é•æšžã•£ã€ã»šã¾£ã•®ã!çç'ã•®ãã,ã°é^tã½2ã•ãã,ãf£ãfãã,¢ã•®æ—1ã•æ€šã,'æ±°ã®šã¥ãã•ãã,ãã
•ã•ã•ã•ããã,ããã,ã•tã€,

çµ•è«—i¼šã,µãf fã,«ãf¼ãã,¢ãfŠãfããf+ã,£ã,ã,1ã«ã•šãã•ãã,ãã,
ãf£ãfãã,¢ãã,ã•®ãfãf¼ãf%ããžãf fãf—

ã,µãf fã,«ãf¼ããf+ãf¼ãã,ãã,¢ãfŠãfã,1ãf^ã•ã•ãç¾¾ã»£ã,µãf fã,«ãf¼ãã«ã•šãã,ã!ã,ã°æ¬ãã
°æ^ç•¥çš,,ãf^ãf¼ãf^ãfšãf¼ãã•ããã•£ã•ÿã€,

sasaki

default watermark