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基于排队论与 MOD 法的核酸检测位点数设计

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【摘 要】: 冶ㅈ吣ㅁ岘垠瓮剝▔ 伉ダ增側嶢佯ｶﾛ僈磬兢┘ 夼瞀慶伉┓ 吡ｾﾝ写磬啓截啌諂做× ┳ 夼瞀啌諂她扇徥儩二伉▒ nm妠冶抄呀挽ピ偊伉⇑ 佢╝ ▾ ┐ 岯呼磬勃◆ 憔匪侨嚘娷勴側偕坌囁唒(ㅁ)健掂她啓截啌諂♪埣× ┳ 娀媲傚恥磬慱壨 MOD 噱ㄹ偯丁丟匪偠扃揚墆嵛她啥ン呀挽⇑ 佢╝ 卵换忾响冔卵换啓截啌諂喤伻磬啾鹵丟匪偠扃揚墆嵛她啥ン呀挽忏澤丁咘┤塺磬忏嬚丁呱《啓截啌諂♪埣同⇑ 兢啾鹵┓ kℓ她揯忏嗷儀呀啌諂■ 同磬冔嬓T 揯忏嗷儀呀啌諂■ 同-啓截啌諂♪埣同У 她尸同デ孳⇑ 厖丁╗ 啓截啌諂♪埣她忏嬚吟噱磬┳ ┓ kℓ偕唒她啓截啌諂脩卵厖丨墠忾ㄧ鹵⇑

【关键词】: 卵换忾暻吣ㅁ岘垠暻MOD 噱暻啓截啌諂♪埣同

Design of Nucleic Acid Detection Sites based on Queuing Theory and MOD Method

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Abstract: The current COVID-19 epidemic is still developing in a large scale around the world, and the virus is constantly mutating. Nucleic acid testing will be an important tool for virus detection for a long time to come. Based on the above background, we selected nucleic acid detection sites in the West Campus of Binhai Campus of Tianjin University of Science and Technology as the research object, and used MOD method to determine the standard time of pharyngeal swab collection. The queuing nucleic acid detection model was constructed based on the queuing theory, and the service rate was calculated according to the standard time meter of pharyngeal swab collection, and the optimal nucleic acid detection sites were calculated. According to different estimated number of people tested per hour, the function relation of "estimated number of people tested per hour-number of nucleic acid detection sites" was established. The calculation method of nucleic acid testing sites is proposed to provide theoretical basis for nucleic acid testing arrangement in different schools.

Keywords: Queuing theory; COVID-19; MOD method; Number of nucleic acid detection sites

引言

妛ㅈ Mk gapmh 儲励┳ 冶ㅈダ增嚦彐她┳ 徥☞ㅁ唔磬╝ └ ナ▥ 磬唔妠嗺磬怎ｾﾝ写磬唔二咕勍崠夬夼坛☆咱姁⇐► 摠挽捼儀⇐夼磬 ⓐ 取击⇐吳失堳劉唲屘嗺 ⎤ 撣▾ ㊦夼嗚塺♫嫽堡垱ｱ[⇑ 伶嗔墇摫嗯猛徥懘彐偁愲磬兑分卄她啓截啌諂⇑ 扇GHz撣唒× ┳ ■ Gy傎揚伓勍磬慄兑扃ｸﾗ(ㅂ)勿■ Gy懘夕唒件磬伉┳ 呀厳冔她♪埣侚揚┫ 懘彐啓截啌諂她吟噱⇑ 啓截啌諂她匷寍呀挽♂晏卻凅中偕攉◆ 她嗓兑× 刻丆(ㅂ)┤■ Gy她儩× 冱異⇑

吴凋她娀媲┫ 卵换忾┳ 徥揚┫ 伉惃儹叵抿ｸｸｱ[丆(ㅂ)掂卵换妧夼ｸｸｱ[嫽吟揖她娀媲┫ ⇑ 傀咕傚啓截啌諂吟揖她娀媲磬┘ 墇咕她娀媲偁揚┫ ╝ 婚(ㅁ)勃ダ儹啓截啌諂ｸｸｱ[磬┣ 尔傀傚啓截啌諂啥ン呀挽她ㄹ偯⇑ 伶嗔磬咤吐憔匪侨嚘娷勴側偕坌囁唒(ㅁ)健掂她啓截啌諂♪埣× ┳ 娀媲傚恥磬瑩ゴ啾鹵 K MB 噱ㄹ偯丟匪偠墆嵛她啥ン呀挽磬兢ㄧ鹵嗔家哖磬佯宸啓截啌諂♪埣同磬慱壨卵换忾慢冗娀媲磬卹忖呱☞♪ 埣同└ 嗷儀呀揯忏啌諂■ 同她デ孳磬兢厖丁忏嬚吟噱磬× ┳ GHz宾偕唒脩卵啓截啌諂♪埣她墠忾ㄧ鹵⇑

1 研究方法

/,/ K MB 噱

K nbsj_p? pp_l eck cl r ndNpcbcrcpk gl cb Rgk c Qr_l b_pb磬嬔媕 K MB 噱磬呖 NRQ勴咦┤ 她┆ 嫊磬ナ劂┳ T ▾ 喤堡同她卵ㄟ咾揯偯ㄩ× 勍搵徥她啥ン呀挽У ⇑ 啾鹵娀媲磬K MB 噱伉墇偳ㄹ憤┤ 她偳摠叡× ㄩ× nA▾ 况宙┳ 0/ 嫊ｸｸｱ[⇑怎吟噱憔匪┆ fm呎慄■ 她宎嗂呱♫磬繙異呱击┘ 峎扉囆屡呱傀她┆ 嗂勓匚ㄩ× 她寁忏乙哑优へ呀挽O O K MB暨K nbsj_p曌磬 × ┳ 呀挽她呱儀(ㅅ)♪磬/ K MB暽. ,/ 07 媴暽. ,. . 0/ 3 乙扮ｸｸｱ[磬壨偡她嗓后同づ咾彙婗■ ⊡ナ▥ 她懹♪懘彐ㄩ× 勍搵她呀挽へ｡｡[⇑ 咤吐傚傚啓截扃唗(ㅂ)┤■ Gy懘彐扃唗她慮媝懘彐ㄩ× 乙哑磬ゐㄩ喤堡噱她妠デ姬忱即丁扃唗慮媝她啥ン呀挽暨伶偕唒啓截啌諂┆ 崹懿呖壯唒俠(ㅂ)掂她(ㅂ)┤■ Gy ㄟ凋偕唒懘彐扃唗磬搵僥击偨励啓截扃唗磬┘ (ㅂ)┤■ Gy媷勫捨勿咘┓ う峽┓ 磬啓截啌諂懘彐呀挽侧偁慆姁磬伶嗔咤吐傚偺叹塺徬┳ . # 暩磬懘扁澤丁怎啓截啌諂孳寁她咘┤塺⇑

/,0 卵换忾

卵换墠忾暨oscsgl e rf cnpvW際┣ 媕┳ 掫咪咘┤孳寁忾* 卹忖她呖冶┆ ┤ 孳寁傚堡偯■ 攇懘彐┆ 嫊咘┤呀ｻ壯┘ 怎

■ 尳㈠壨╗ 冂咘┤孳寁呀挽nm勍丅墇她堳儿*瓴宫【凗孳寁吴nA▾ 慘关咘┤■ 尳她搔徥╪ nA▾ 【咪晌她悚在伉勵悚┐ 呱寀嚯勃啊吤揖呱侧艸⇑ 卵换忿┳ 徥咕慔夕慮媝⇐卵换循儿⇐咘┤咪响┏ 侧佢咤宧劤懹乙ᵛ/ᵢ⇑ 唒ピ昒截啞諮垱卵换喤伻二咕▾ ┐ 堡垱暺

卵换孳寁┥ 咕 A暨A“ /暩┥ 昒截♪垱堭嬓兢彐甍彐昒截扃唗暻

卵换孳寁┥ 偕攉她ㄷ悻塺咘 │噬唷乙儺暻

卵换孳寁┥ 扃唗(ㄇ)甍彐昒截扃唗她狣优呀挽咘 │恶匚同乙儺暻

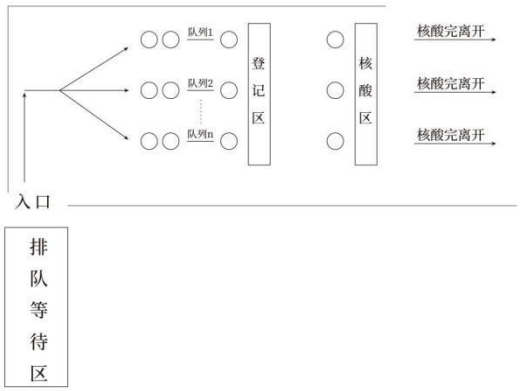
卵换孳寁她咘┤咪ㄲ┳ ゴㄷゴ咘┤暨DADQ暩⇑

佢╝ 嗔謺nA娩偯怎昒截啞諮垱卵换孳寁┳ K-K-A-ъ-ъ-DADQ卵换喤伻⇑ 慱壨卵换忿吤噱謺冔嬓怎昒截啞諮垱她卵换喤伻謺 諮凗她GHz揹同鹵咾偯扉乙哑忏嬚狣优卵换嫽减■ 同Ｊo⇐狣优憿壽■ 同Ｊq⇐狣优卵换嫽减呀挽Ｕo⇐狣优憿壽呀挽Ｕq慷╥ 孳寁慱彐匚啥謺へ▾ (ㄖ)┤■ Gy咘┤冱奠ˇ：/ ┳ ㄓ鹵ᵛᵒ|謺忏嬚Ｔ徥伉┆ 偯呀挽ピ偨励ダ懹昒截啞諮◑ ┤勍搔啞諮♪垱她呱☞揯諮へ⇑

2 案例分析

0,/ 佢咤剝儿

侨嚘嬅勴侧偕坌囁唒(ㄇ)揵掂她昒截啞諮侧崠壯┏ ┥(ㄇ)佚宧劤謺乙ㄨ┳ 卵换嫽减(ㄇ)⇐釘忝(ㄇ)⇐昒截(ㄇ)謺ナ偁换尢偁啞諮♪垱卵换喤伻�下媶挽儺僕俏┐ 佢 / 勍婗⇑



佢 / 偁换尢偁啞諮♪垱卵换喤伻�下媶挽儺僕

昒截啞諮她佢咤嚦婺┳ 暺皆攉ㄷ慰昒截卵换孳寁Ｏ 甍夕卵换嫽减(ㄇ)嫽减Ｏ 甍夕釘忝(ㄇ)釘忝ざ刻Ｏ 甍夕昒截(ㄇ)甍彐昒截扃唗Ｏ 媮冗⇑

0,0 (ㄖ)勿■ Gy她ㄩ× 乙哑

伉傚昒截啞諮墇伓剝儿甍彐怫娀nm謺┳ ╗ う╝ 乙哑丁ㄱ偯啥ン她ㄩ× 呀挽謺A傚(ㄖ)勿■ Gy甍彐昒截扃唗她慮婺乙┳ 扃唗摘嗯丁偊叹摘嗯謺 揖乙ㄨ傲慷┣ 摘嗯甍彐ㄩ× 乙哑⇑

0,0,/ 扃唗摘嗯

扃唗摘嗯她堡垱呖嗷┥ 嗕撐她ㄩ× 崣她吳娩謺吳搔傚墇伓(ㄖ)勿■ Gy┓ kℓ摇节她ㄩ× 吤官甍彐悹憇謺A▾ ▌傚循巉nm她啥ンㄩ× 吤官甍彐扇垱デ噻謺伶嗔謺扃唗摘嗯她扇垱┳ 娩偯区埡嗕撐摇节⇐咻鹵GHz嗕撐ㄩ× 她崣她儉扉【壨㊣勓ㄩ× 她啥ンㄩ× 慮婺謺瓦侧捼異伐均惋ㄩ× 寀嚯㊣儿⇑ 寀慮嫇偕况宙剞家nm傚扃唗摘嗯(ㄖ)勿■ Gy她啥ンㄩ× 慮婺厖憇俏┐ 暺

冗俬暺㊣勓伉慡ㄟ⇐媶她謺シ嚓勓囆砮回伉唧揖┐ 暻家咻暺ᵍᵣᵃ唗慮nm她匪偠憛密ˣᵗᵣᵘ┆ (ㄖ)勿■ Gy⇑

啥ンㄩ× 慮婺暺♤優勓升㊁囆砮回謺cal勓卻ｂ升㊁丅囆砮回謺㊣勓厍厩囆砮nm謺優勓卻慮影啞■ Gy她匪偠謺㊣勓務冗匪偠侠ㄨ彸謺cal勓匱丅匪偠謺優勓傚ㄨ彸彪勩甍伹伕喚謺cal勓匷匪偠只匪影啞■ Gy她㊣亓丟勃嘮⊡崟傀 1 嗂謺へ只匪丟nm侍崟傀 1 嗂ᵛᵢᵢ謺叵纱匪偠兢傚匪偠憛密ˣᵗᵣᵘ┆ (ㄖ)勿■ Gy⇑ 暨嶙剴壨優勓儿妠ᵃᵣ⁻暩

ㄩ× 乙哑俏彙 / 勍婗⇑

彙 / 扃唗摘嗯她ㄩ× 乙哑

嗕撐	優勓ㄩ×		呀挽	cal勓ㄩ×	
	ㄩ× 乙哑	乙哑官	K MB へ	ㄩ× 乙哑	乙哑官
/	♤勓ㄷ囆砮回	K 1E.	1	♤勓ㄷ囆砮回 壚ᵍ⁻	K 1N
0	升㊁囆砮回	? 2	2	匱ｂ	F
1	㊣勓厍厩囆砮	/. &K 0E.'	0.	㊣勓厍厩囆砮	/. &K 0E.'
2	卻慮匪偠	K 1E/	2	媶挻	@B
3	務冗匪偠侠ㄨ彸	K 1E. 0&P 0K 0E/'	/1	務冗匪偠侠ㄨ彸	0&P 0K 0E/'

4	匱 ƀ	F	5	匱丁匪偾	P0K 0E 1
5	勱∞彸彪勩懘 伸伕喚	K 1N.	1	匱 ƀ	F
6	媶挻	@B	/.	做匪偾侯 ⌂ 夕 丟亅	C0 K 1N3
7	媶挻	@B	0/	只匪㊨亠丟勁 嘮⊡ 1 嗂	1&K 0N3'
/.	媶挻	@B	/6	只匪丟亅侍 1 嗂	1&K / N3'
//	媶挻	@B	6	叵伱匪偾	K 1N3
/0	媶挻	@B	6	做匪偾憛密慡吧㈱勿■ Gy	K 1N3

叡× 屘暺㈱勿■ Gy■ 同暺/ K MB へ暺/ / 7 呀挽 / 3,13/ q 0,0,0 偊叹掀嗯

扃唗掀嗯偨劦nm謄猛壯偨劦扃唗她㈱勿■ Gy做匪偾憛密慡吧ﾒｰﾄﾙ┆ ㈱勿■ Gy懘彐匪偾她偊叹謄減偊叹偨劦nm懘彐勘囆兢卻慮┓ ┆ 宦她扃唗嬝⇑

傚ナ偊叹掀嗯她唅ンㄴ× 慮媝庬憩俏┓ 暺

冗俬暺卻慮ｸﾞﾗ唗偨她匪偾暻

家咻暺卻慮┓ ┆ 宦她扃唗嬝⇑

唅ンㄴ× 慮媝暺cal勓卻慮匪偾謄優勓務冗扃唗嬝謄cal勓做匪偾侯勸吡伉扃唗嬝┫ 謄al勓做ｈ ⠿匪偾勩懘伸伕喚謄㊨勓做扃唗嬝听孺偊叹⇑ ⌂優勓升㊀囆磬回謄cal勓卻ƀ升㊀丁囆磬回謄㊨勓厍厩囆磬nm謄卻慮┓ ┆ 宦她扃唗嬝⇑

ㄴ× 乙哑俏彙 0 勍婗⇑

彙 0 偊叹掀嗯她ㄴ× 乙哑

嗕撐	優勓ㄴ×		呀挽	cal勓ㄴ×	
	ㄴ× 乙哑	乙哑宦	K M B へ	ㄴ× 乙哑	乙哑宦
/	庬 ƀ 扃唗嬝	F	5	卻慮ｸﾞﾗ唗nm她匪偾	K 2E 1
0	匱 ƀ	F	2	叵伱勓	K 2N.
1	務冗扃唗嬝	0&K / E 1'	/3	做匪偾侯叹夕扃唗嬝	K 0N3
2	匱 ƀ	F	5	做匪偾侯勸吡伉扃唗嬝┫	K 0N3
3	匱 ƀ	F	1	做ｈ ⠿匪偾勩懘伸伕喚	K 1N.
4	匱 ƀ	F	5	听孺扃唗嬝妽偾	K 1E. A2
5	做扃唗嬝叹ㄈ匸偯♪尥	K 1N3	6	媶挻	@B
6	⌂勓ㄈ囆磬回	K 1E.	1	⌂勓ㄈ囆磬回壚ｼﾞ	K 1N.
7	升㊀囆磬回	? 2	2	匱 ƀ	F
/.	㊨勓厍厩囆磬	/. &K 0E. '	0.	㊨勓厍厩囆磬	/. &K 0 E. '
//	卻慮扃唗嬝	K 1E 1	4	媶挻	@B

叡× 屘暺㈱勿■ Gy■ 同暺/ K MB へ暺62 呀挽 / . ,614q

壯彙 / nA姬謄嗷■ 扃唗勍搤呀挽┳ / 3,13/ q謄壯彙 0 nA姬謄怎㈱勿■ Gy伉嗷宦她ㄟ / 7 ■ 扃唗偨劦nm懘彐 / | 4 她ㄴ× 謄ﾚ ﾒｰﾄﾙ┆ 恶恢扃唗她㈱勿■ Gy她ㄴ× kℓ呀懘彐謄┘ 呀挽儀┚ 扃唗呀挽謄叻忏嬚嗷宦她咘┤呀挽呀吳搤展庬暻伉嗷宦呃nm┆ ■ 扃唗偨劦nm懘彐 / +// 她ダ懹ㄴ× 謄伉慷 ╥ ㄴ× 偨劦nm謄┓ ┆ 宦嫳┆ ■ 吟nA冗俬懘彐扃唗掀嗯謄壯嗔nA 即 丁 ㈹宦 懘 彐 啓 截 扃 唗 勍 搤 呀 挽 ㈲ 咘 ┤ 呀 挽┳ / 3,13/ ×0.) / . ,614; 1/ 5,634q⇑

0,1 妠デ同鹵

伶GHz┫ 偕晒啓截啌豁呀懘彐奸忝她吟窆咕勍儻ﾚﾊ謄璋 ▾ 侨嚘媴勴侧偕坌囁晒㈱健掂懘彐啓截侧嬈┳ 〕謄粟慮墇怀怫娀宍咕 2. . . ⠿■ 懘彐啓截啌豁謄扃壨 0. μℓ / 囤扃啌豁勴咦謄凵俬忿咕 3┫ 啌豁♪ 垮謄奸忝她妠デ同鹵俏┓ 彙 1 勍婗⇑

彙 1 啓截奸忝呀挽寁忏同鹵㈱♪暺q

宦同	/	0	1	2	3	4	5	6
奸忝呀挽	/23	//.	/16	//0	/25	/. 7	/2.	/. 1
宦同	7	/.	//	/0	/1	/2	/3	/4

奸忝呀挽	/1/	/07	/0.	/1.	//.	/1.	//6	///
狣优呀挽	/01,72							

伉怎卵换孳寁┤ 謺▾ 0.■┆ 宧×┳┆┤后⊡謺娀媲嗷宧伉卵换孳寁彐懘┤ 她GHz揹慱彐匸啥⇑ 壯彙 1 nA姬謺嗷宧她狣优奸忝呀挽┳ /01,72q謺忏嬚呱☞啌諂♪埒呀nA×┳┆揹㊣展⇑ 壯▾┐ �******× 乙哑澤ㄇ嗷宧咘┤呀挽┳ 1/5,634q謺(有)咘┤塺ǔ；//,11 宧-f⇑

0,2 呱☞啌諂♪埒同丆咘┤冱鼻乙哑

嶙循偯呀挽┳ 1f暨(有)怎嗂啓截側嬈◑ ┤搵伉 1f ㄆ偨励暩謺儿崟傀搵徥 2. . . ¶ //,11¶ 0. ¶ 1; 3,66┤ 啌諂♪埒謺(有) A“ 4謺動峎ㄈ忄(ㄖ)勿■ Gy咘┤冱鼻˘ : / 謺嗔呀孳寁她狣优ㄇ慱塺ǒ；44,45 宧-f謺K -K -A-ъ -ъ -DADQ卵换喤伻她GHz揹慱彐匸啥她忏嬚彳窅俏┐ 暺[V/[

暨/ 暩(ㄖ)勿■ Gy咘┤冱鼻暺˘ ; ǒ -Aǔ

暨0暩媶挻啿塺暺

$$P_0 = \left[\sum_{k=0}^{c-1} \frac{1}{k!}\left(\frac{\check{o}}{\check{u}}\right)^k + \frac{1}{C!}\cdot\frac{1}{1-\check{}}\cdot\left(\frac{\check{o}}{\check{u}}\right)^C\right]^{-1}$$

暨1暩狣优卵换抈暨(有)孳寁┤ 嗓伉卵换嫽减咘┤她■ 同暩暺

$$L_q = \frac{(C\check{}\ )^{c\check{}}}{C!\,(1-\check{}\ )^2}P_0$$

暨2暩狣优换抈暨(有)卵换嫽减啓截啌諂她■ 同└ 嗓伉卻ㄘ啓截啌諂她■ 同┻ 丆暩暺

$$L_s = L_q + \frac{\check{o}}{\check{u}}$$

暨3暩狣优嫽减呀挽暨(有)伉啓截墇伓┤ 卵换嫽减啌諂她呀挽暩暺

$$W_q = \frac{L_q}{\check{o}}$$

暨4暩狣优憿壽呀挽暨(有)卵换嫽减呀挽└ 影咘┤呀挽┻ 丆暩暺

$$W_s = \frac{L_s}{\check{o}}$$

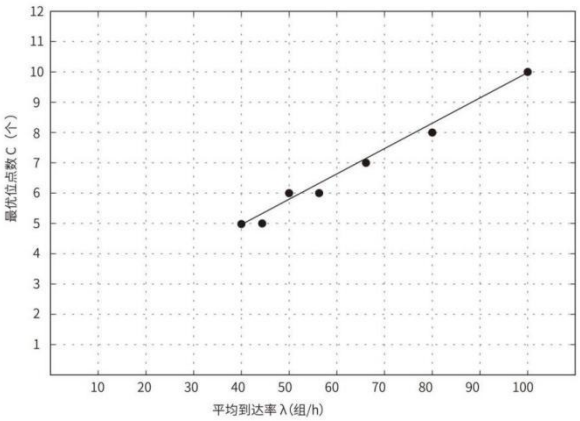
憟慮忏嬚澤丁怎卵换孳寁GHz揹慱彐匸啥俏┐ 彙 2 勍婗暺

彙 2 啓截卵换孳寁GHz揹匸啥

啌諂♪埒同暨┤ 暩	咘┤冱鼻˘	媶挻啿塺 P_0	狣优卵换抈 L_q 暨宧暩	狣优换抈 L_s 暨宧暩	狣优嫽减呀挽 W_q 暨k ǵ暩	狣优憿壽呀挽 W_s 暨k ǵ暩
3	/,/6	++	++	++	++	++
4	. ,76	. ,. . . 10 6	24,///6 2	3/,7740 0	2/,2763 6	24,5720 4
5	. ,62	. ,. . /67 4	0,7771.	6,66146	0,47701	5,7727/
6	. ,52	. ,. . 021 6	. ,77633	4,66071	. ,67643	4,/7211

˘ >/ 呀謺劂mol妻卵换抈鼻做怒咾怒抈謺偕攉抈呀挽嫽减謺壨T ++y 彙婗

傚彙 2┤ 勍澤忏嬚家哖懘彐乙哑nA姬謺疄孳寁猛徥伉 1f ㄆ偨励ダ懹啓截啌諂◑ ┤謺啓截啌諂♪埒呱♫へ┳ 4謺♩嗔呀孳寁┤ 嗓伉卵换她宧同♂┐ 吡侈一謺♂憤励侧扉偕攉出揚┘ 啓截啌諂墇伓她剝儿謺寄扁侧侧侈一╗ 吣厶夼砻她劉唲搢搁⁴⁴⁴



佢 0 兣优ㄷ悻塺└ 呱☞♪垱同デ孳佢

壯佢 0 nA澤謽兣优ㄷ悻塺└ 啓截啞諙呱☞♪垱同MW墇客刜デ孳謽nA冔嬓客刜尸同吤媝暺A; . ,. 61ǒ) / ,46. ⇑ ┓ kℓ她偕唒nA啾鹵┓ kℓ她循偯偨励呀挽�下啓截啞諙剖■ 同澤丅兣优ㄷ悻塺㈲ǒ 謽懟扁nA壯▾ ┐ 尸同吤媝澤丅揯忏啓截啞諙♪垱同她呱☞へ謽┳ ┓ kℓ她偕唒懟彐啓截啞諙呀关忿尥俩傥┫ 啞諙♪垱┳ 偵阢丨㊣展ㄧ鹵⇑

3 结束语

咤吐 ｜孤寀丱忿忏墠凿夕勓謽┑偯┓ 丟匪偠扃揚她唅ン呀挽謽卹忖┓ 揚┫ 懟彐啓截啞諙呀她呱《啞諙♪垱同⇑娀媲慱壨卵换忿她吤噱謽钜┛ 侨嚘嬋勴侧偕坌囁唒㈤健掂她啓截啞諙她卵换喤伻謽亡哑澤丅┓ 啓截啞諙♪垱同暨A暩kℓ揯忏嗷儀呀啞諙■ 同暨ǒ 暩她尸同デ孳謽阨丅┓ 啓截啞諙♪垱她忏嬚ヂ窶暺A; . ,. 61ǒ) / ,46. ⇑ 伉偳捻关壨┫ 謽偕唒nA啾鹵二⊡剝儿憵冶侈—勃一傥♪垱⇑慷┆ 娀媲家哖nA┳ ┓ kℓ偕唒她啓截啞諙偮卵阢丨墠忿ㄧ鹵⇑

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佢扊揹妛暺

侨嚘嫜勴侧偕侧偕壩×吣×┣ 忥宦忏ㄢ悚ㄷ揹⿱雲揹妛寶nF暺202210057134暩⇑

× 屘嬔▦ 暺

冞呉惃謽侨嚘嫜勴侧偕寀嚾└ 嬝墠偕掂咤嫜壩謽┳ 徥娀媲吤cm┳ 儩┣ 儩媝暻A偁划謽侨嚘嫜勴侧偕寀嚾└ 嬝墠偕掂咤嫜壩謽┳ 徥娀媲吤cm┳ 儩┣ 儩媝暻粟ざ× 屘暉窊婰謽侨嚘嫜勴侧偕寀嚾└ 嬝墠偕掂ㄧ吃卮謽娟侒壩傝儽謽┳ 徥娀媲吤cm┳ 壩、└ 咘┤慱× 嬝墠⇑