OVERLAPPING SEQUENCES

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Starting with two or more generic sequences, there are several ways in which they may be arranged in relation to each other, sometimes forming a word. The sequences may:

1. follow on from each other (Sequential Words WW2005003).
2. interlock (Unique Generic Locks WW2007251)
3. occur one within another (Sequences Within WW2007342)
4. overlap

In 1, 2 and 3 above, the sequences do not share any letters. In 4, they share letters.

Overlapping Sequences investigates category 4.

The genres of sequences considered are palindromic (P), tauntonic (T), Miami (M) and ladder (L). The reader is directed to Miami Words (WW2000014) and Ladder Words (WW2002279). The sequences may be of the same genre or different genres. The first and last letters of a word are not admitted as overlapping letters. Single letter overlaps are not included. Examples for certain of the overlap combinations which are absent from sections 1 – 16 below can be found in section 17. Alternative Overlaps.

Miami sequences (letter pattern 12?12) in which the middle letter ? is a repeat of one of the other 2 letters (1 or 2) are not included in the current exercise. For the present purpose, a ladder sequence is deemed to have 9 letters. The 3 trigrams of which the ladder sequence is formed must all be different. There are nine possible such 9-letter ladder sequences. Their letter patterns are identified by superscript numbers:

\[
\begin{align*}
123.423.523^1 & \quad 123.423.453^2 & \quad 123.423.425^3 \\
123.143.543^4 & \quad 123.143.153^5 & \quad 123.143.145^6 \\
123.124.524^7 & \quad 123.124.154^8 & \quad 123.124.125^9
\end{align*}
\]

As well as being constructed from overlapping sequences, some of the words listed can also be viewed as Sequential Words (see 1 above). These are identified by SW.

Many of the words are locations. Identified by country, these are taken from the United States Board on Geographic Names. Unreferenced words can be found in the Oxford English Dictionary, Second Edition. Other references: \textit{cham} = Chambers English Dictionary; \textit{dor} = Dorland’s Medical Dictionary; \textit{web2/3} = Webster’s 2\textsuperscript{nd}/3\textsuperscript{rd} Edition. In sections 1-16, the lists of words read across the page.

1. TWO OVERLAPPING PALINDROMIC SEQUENCES

\textbf{2-letter overlap}

\begin{itemize}
\item 3P over 3P \textsc{MAMA} and other 4-letter tauntonics
\item 3P over 5P \textsc{KOKAKO} (the New Zealand Wattle-bird)
\item 3P over 8P \textsc{RNRRGRGRN} (a Yurok Indian place name)
\item 4P over 3P \textsc{ANNAN, AZZAZ, BEEBE, DEEDE, ELLEL, ERRER, PEEPE, REERE, VEEVE}
\item 4P over 4P \textsc{ESSEES}
\item 4P over 6P \textsc{AN-NASSAN} (Bahrain)
\item 5P over 3P \textsc{REVERE} and many more
\item 5P over 5P \textsc{REPERRR, TEPETATE}
\item 6P over 3P \textsc{CARRACA} (a galleon), \textsc{TAFFATA}
\item 7P over 3P \textsc{MESOSEMEE}
\item 9P over 3P \textsc{CALAJALACA} (Bolivia)
\end{itemize}

\textbf{3-letter overlap}

\begin{itemize}
\item 4P over 5P \textsc{TEETEE} (diving Petrel), \textsc{ZOOZOO} (wood-pigeon)
\item 5P over 5P \textsc{OIDIOID} (web2), \textsc{TELETEL} (pigeon)
\item 6P over 5P \textsc{GUNNU-GUN} (Japan)
\item 7P over 5P \textsc{ROOCOOROO} (of a pigeon - to coo)
\end{itemize}

\begin{itemize}
\item 4P over 6P \textsc{ARRACAR} (\textit{cham}), \textsc{ESSESES} (Essene
\item 4P over 7P \textsc{AKKAYLYAK} (Kazakhstan) \textit{\textsuperscript{1784 cit.)}
\item 5P over 4P \textsc{CASACCA, LEVELEL, REFERRE}
\item 5P over 7P \textsc{TLALTEPETL} (Mexico)
\item 6P over 4P \textsc{TERRETTE} (France)
\item 7P over 4P \textsc{LEUQUELLE} (Spain)
\item 10P over 3P \textsc{MAGALLAGAMA} (Sri Lanka)
\end{itemize}

\textbf{4P over 6P \textsc{SAASSAA} (Syria)}

\textbf{5P over 6P \textsc{METEMMET} (Eritrea)}

\textbf{6P over 6P \textsc{ALEELAAL} (Somalia)}
4-letter overlap
5P over 7P COROCORO (a type of boat) + other 8-letter tautonyms with letter pattern 12321232. 5P+3P SW
5P over 9P KIRIKAKIRI (Nigeria)

5-letter overlap
6P over 9P CORCORCORRO (a type of boat) + other 10-letter tautonyms with pattern '23212332. 6P+4P SW

6-letter overlap
7P over 11P BITITI-BITITI (Congo Republic) a 12-letter tautonym with pattern 1232321232. 7P+5P SW

2. TWO OVERLAPPING TAUTONYMIC SEQUENCES

2-letter overlap
4T over 6T EDEDJEDJ (Algeria) 4T over 8T JIRIMIRIM (Brazil) 5P + 5P SW
6T over 4T AKOAKKOKO (Ghana) M + 3P SW 8T over 4T JHUNJHUNUN (India)

3-letter overlap
4T over 8T PA-PAPA-PAN (Taiwan)

3. TWO OVERLAPPING MIAMI SEQUENCES

2-letter overlap
M over M KALKASKA (Michigan, USA)

4-letter overlap (the maximum possible for M over M)

M over M 6-letter tautonyms such as ATLATL, BERBER, CANCANCAN, DUMDUM, ENTENT, FURFUR, GAGAN (a cockatoo), HAWHAW, ILOILO, JAWJAW, KUSKUS, LOLOG, MURMUR, NAGNAG, ONEONE, PAWPWAPW, QUADUA, RAHRAH, SOUSOU, TARTAR, UNSUNS, VERVER, WAHWAH, XINXIN (Chins), YENYEN, ZIGZIG

4. TWO OVERLAPPING LADDER SEQUENCES

5-letter overlap
L1 over L9 BOULOUMOUNOUA (Congo Republic) L2 over L3 BANTANTINTING (Senegal)

7-letter overlap
L1 over L5 HOEOEOBOEGO (Indonesia) L1 over L6 KOUROUNOUNA (Mali)
L2 over L8 KUNGUNGAANDA (Tanzania) L2 over L9 OBERBERGER (Austria)
L4 over L5 KINKONDOONGA (DR Congo) L4 over L9 NHANGANZANE (Mozambique)

8-letter overlap
L1 over L7 PERVERTERS, TANZANIANS, HERBERGERY L6 over L2 HASHISHIAH (Yemen) L6 over L5 CHACHOCHIC (Mexico)

5. PALINDROMIC SEQUENCE OVERLAPPING TAUTONYMIC SEQUENCE

2-letter overlap
3P over 6T AGAMGAM (Morocco), EFELFEL (Mali) 3P over 8T OYOLEYOLE (DR Congo)
3P over 10T ORONGORONGO (New Zealand) 3P over 12T OQUOLOUOGOULOU (Togo)
4P over 4T DEEDED 5P over 4T CIMICIC, REVERER
5P over 6T REVERSERS 6P over 4T OKA-AKOKO (Nigeria)

3-letter overlap
5P over 8T NAWANUWANU (Fiji) 5P over 10T NAKANDIKANDI (Fiji)

4-letter overlap
5P over 8T PARAPARAP (Australia) a palindrome with alternating letters A

6. PALINDROMIC SEQUENCE OVERLAPPING MIAMI SEQUENCE

2-letter overlap
3P over M EYEYTYE, LELWEL, NONON, TITBIT 4P over M XAAXKAX (Mexico)
3P over M NEWENDEN (UK), REVERTER 6P over M NIPPING-IN (see ‘wringing’, vbl.
\ n.i.c.1839 citation)
7. PALINDROMIC SEQUENCE OVERLAPPING LADDER SEQUENCE

2-letter overlap
3P over L₁ CACHICHOCH (Guatemala) 3P over L₂ HOHENHENNE (Germany)
3P over L₁ ROBERBERBER (Austria) 3P over L₂ NONCONTENT
3P over L₁ NANSANJANG (South Korea)

8. TAUTONYMIC SEQUENCE OVERLAPPING PALINDROMIC SEQUENCE

2-letter overlap
4T over 4P OGOGGO (Ethiopia) 4T over 5P REREFER, ULULALU
4T over 6P SUSURRUSS 4T over 7P SASARARAS
6T over 3P BARBARA, TSETES 6T over 4P CINCINNI, CUSCUSSU
6T over 5P CIUCIUULUI (Romania) 8T over 3P ANAPANAPA (web2)
8T over 4P BUNABUNAAN (Philippines) 10T over 4P KOUANKOUANNA (Mali)
10T over 3P INDELINDELE (Congo Republic) 10T over 5P QUINAIQUINANI (Peru)
10T over 5P ANANTANANTANA (Madagascar) an M + M + 3P SW and also a 10T + 3P SW

3-letter overlap
8T over 5P GHARGHARAH (Afghanistan)

9. TAUTONYMIC SEQUENCE OVERLAPPING MIAMI SEQUENCE

2-letter overlap
4T over M UNUNUN (web2) 6T over M REDREDGED
8T over M CURICURJARI (Brazil) 10T over M BILANBILANGAN (Philippines)
14T over M JANGANGJANGANGANG (Indonesia)

3-letter overlap
8T over M CANICANIAN (Philippines)

10. TAUTONYMIC SEQUENCE OVERLAPPING LADDER SEQUENCE

2-letter overlap
4T over L₁ BOBOELOETOE (Indonesia)
6T over L₂ KOEKOMOEIOEK (Indonesia)

11. MIAMI SEQUENCE OVERLAPPING PALINDROMIC SEQUENCE

2-letter overlap
M over 3P SENSES, REARER
M over 5P DEADENED
M over 7P ANJANAZANA (Madagascar)

3-letter overlap
M over 5P IWILWIL (Morocco)

12. MIAMI SEQUENCE OVERLAPPING TAUTONYMIC SEQUENCE

2-letter overlap
M over 4T CIVCICIC (Bosnia & Hertegovina) - a Roman numeral location
M over 6T INRINGING
M over 8T TANTARATARA

3-letter overlap
M over 8T ANJANJOJANO (Madagascar)

4-letter overlap
M over 8T ERHERRHER (Mali)
M over 10T O'NYONG-NYONG (a virus disease in East Africa)
13. MIAMI SEQUENCE OVERLAPPING LADDER SEQUENCE

3-letter overlap
M over L³  OKUOKPOKPOR (Nigeria)

4-letter overlap
M over L³  CHACHOCHIC (Mexico)

M over L⁵  INRINGINGS

14. LADDER SEQUENCE OVERLAPPING PALINDROMIC SEQUENCE

2-letter overlap
L¹ over 3P  HERBERGERE, PERVERTERE
L² over 5P  SANT'ANTONINO (Italy)
L³ over 4P  MISSISSIPPI
L⁹ over 3P  PAMPAYPATA (Peru)

L¹ over 3P  BIRKIRKARA (Malta)
L² over 3P  OTIOBIOSES (Nor)
L³ over 5P  MANGANGARARA (New Zealand)
L⁹ over 4P  CONCORCOLO (Bolivia)

15. LADDER SEQUENCE OVERLAPPING TAUTONYMIC SEQUENCE

2-letter overlap
L¹ over 4T  PANOANDANAN (Philippines)

6-letter overlap
L¹ over 12T  MOUKOUOUKOUOULOU (Congo Republic)

16. LADDER SEQUENCE OVERLAPPING MIAMI SEQUENCE

3-letter overlap
L⁹ over M  OUTOUKOULOU (Chad)

4-letter overlap
L² over M  XIANJIANWAN (China)

L³ over M  IKOUKOUOULOU (Congo Republic)

17. ALTERNATIVE OVERLAPS

The same word may afford alternative overlapping sequence combinations.

TWO SEQUENCES OVERLAP

A combination of P and/or T sequences
3P over 7P  KUKURUKU (web2)
4T over 7P  KUKURUKU

5P over 5P  AIAIAI, HAAHAHA etc. (letter pattern 121212)
5P over 4T  AIAIAI, HAAHAHA 3P + 3P SW
4T over 4T  AIAIAI, HAAHAHA
4T over 5P  AIAIAI, HAAHAHA

7P over 5P  ANALANANA (Madagascar)
7P over 4T  ANALANANA

7P over 7P  ANAHANAHANAA a 3P-8T and an 8T-3P SW
7P over 8T  ANAHANAHANA
8T over 7P  ANAHANAHANAA (Madagascar)

3P over 4T  IGIGI (web3), AJAJA (web2)
4T over 3P  IGIGI, AJAJA

4T over 6P  KOKOKOKO (Ghana) 4T + 3P SW
4T over 6T  KOKOKOKO

8T over 4T  CHECHECHECHEHEH (Turkmenistan)
8T over 5P  CHECHECHEHEH

A combination of P and/or L sequences
L¹ over 4P  GALWALAILA (Sri Lanka)
L¹ over 7P  GALWALAILA

A combination of T and/or M sequences
L¹ over 8T  QUEQUESPES (Honduras)
M over 8T  QUEQUESPES

6T over M  ALFALEA ENTENTE GINGING HATHATH KUCKUCK PREPREP SEMSEMS TZITZIT
M over 6T  ALFALEA ENTENTE GINGING HATHATH KUCKUCK PREPREP SEMSEMS TZITZIT
M over M  ALFALEA ENTENTE GINGING HATHATH KUCKUCK PREPREP SEMSEMS TZITZIT

(web2)  (cham)  (web2)

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A combination of M and/or L sequences
M over L¹ OUTOUKOULOU (Chad) M over L⁴ OUROUKONKO (Guinea) M + M SW
L⁹ over M OUTOUKOULOU L⁸ over M OUROUKONKO
M over L¹ KONKOUDOUGOU (Ivory Coast) L¹ over M TYARYAKYAMYA (Azerbaijan) a 12-letter, L¹ over L¹ TYARYAKYAMYA 4-step ladder word
L¹ over L¹ KONKOUDOUGOU

A combination of P, T, M sequences
5P over 6T KISIKSIK (Nicaragua) 6T over 5P HALHALAH (Yemen)
5P over M KISIKSIK M over 5P HALHALAH

A combination of P, T, L sequences
L² over 4P TOCCOCCACCA (Peru) 6T over 5P HALHALAH
L³ over 6T TOCCOCCACCA

A combination of T, M, L sequences
6T over L¹ KOEKOEROEBOE (Indonesia) 6T over L⁶ KONKONDONGO (DR Congo)
M over L¹ KOEKOEROEBOE M over L⁵ KONKONDONGO
6T over L⁶ KHAKHACHACA (Bolivia) 6T over L⁶ VARVARIANI (Greece)
M over L⁶ KHAKHACHACA M over L⁶ VARVARIANI
6T over L⁶ JENJENJETJEM (Sweden) 6T over L⁶ TINTINNINA - a Protozoan Suborder
M over L⁶ JENJENJETJEM M over L⁹ TINTINNINA
12T over M TOUKOUTOUKOUZOU (Ivory Coast)
12T over L¹ TOUKOUTOUKOUZOU
L¹ over 6T KOUNBOULOLOU (CAR) L¹ over 6T PANDANGANG (Indonesia)
L¹ over M KOUNBOULOLOU L¹ over M PANDANGANG
L² over 6T NANKANKONKO (Zambia) L² over 6T AGYAGONON (Philippines) M + M SW
L² over M NANKANKONKO L³ over M AGYAGONON

18. MULTIPLE OVERLAPS

So far, all the examples have a single overlap. Here are a few words with more than one overlap.

ONE OR TWO OVERLAPS

L⁹ over M OUKOULOOUROU (Burkina Faso) L¹ over L¹ SOOUOOUKODUGUU (Guinea)
M over L¹ OUKOULOOUROU L¹ over M OVEROUKDOUGOU
M over L³ over M OUKOULOOUROU L¹ over L¹ over M OUKOULOOUROU
M over M over M OUKOULOOUROU

TWO OVERLAPS

These words contain an embedded sequence which is overlapped at both its ends by 2 other sequences:
3P over L² over M KIKOKOUTO (Congo Republic) 4T over L³ over 6T PAPANDANGANG (Indonesia)
4T over L¹ over M PAPANDANGANG
M over 5P over 4T ANDANONANA (Madagascar) M over M over M AWGAUAWGRAW (Nigeria)

THREE OVERLAPS

This is a rare word indeed!
M over M over 6T over M OUKOUROUKOUKOU (Benin)
M over M over M over M OUKOUROUKOUKOU