Notes working out the solution for example problems from lectures 32 & 33.

Page size is 64 bytes so VPO & PPO are both \( \log_2(64) = 6 \) bits

Memory reference: Virtual address 0x0354

14 bit Virtual Address = 000011 01010100

\[
\begin{align*}
\text{VPN} &= 0x0D \\
\text{VPO} &= 0x14
\end{align*}
\]

Looking up TLB with VPN:

\[
\begin{align*}
00001101 & = \text{TLB hit} \\
\text{TLB Tag} & = 0x03 \\
\text{TLB Index} & = 0x1
\end{align*}
\]

So, Physical Address is

\[
\text{PPN} + \text{PPO} \quad \text{(but PPO is same as VPO)}
\]

\[
\begin{align*}
\text{PPN} &= 00101101 & \text{PPO} &= 010100
\end{align*}
\]

= discarding most significant zero bits to get the 12 bit physical address

\[
101101010100 = 0xB54
\]

Looking up the L1 cache, we get the 1 byte word 0x36 with a L1 cache hit.