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Let $l^2(\mathbb{Z})$ be the Hilbert space of square summable double sequences of complex numbers. We say that a bounded matrix A on $l^2(\mathbb{Z})$ is generated dyadically by a 2×2 block if there exist bounded matrices $P = (p_{ij})$, $Q = (q_{ij})$, $V = (v_{ij})$, $W = (w_{ij})$ on $l^2(\mathbb{Z})$ and $a, b, c, d \in \mathbb{C}$ so that

1. $\langle Ae_{2j}, e_{2i} \rangle = p_{ij} + a\langle Ae_j, e_i \rangle$;
2. $\langle Ae_{2j}, e_{2i-1} \rangle = q_{ij} + b\langle Ae_j, e_i \rangle$;
3. $\langle Ae_{2j-1}, e_{2i} \rangle = v_{ij} + c\langle Ae_j, e_i \rangle$;
4. $\langle Ae_{2j-1}, e_{2i-1} \rangle = w_{ij} + d\langle Ae_j, e_i \rangle$

for all i, j, where $\{e_n : n \in \mathbb{Z}\}$ is the standard basis for $l^2(\mathbb{Z})$.

In this talk, we shall compute the entries explicitly of the solutions for some specific examples, as well as presenting some interesting properties of the above system of equations. We will show, in fact, that solving the above system is closely related to the spectral properties of certain action induced by a shift (with infinite multiplicity) on $\mathcal{B}(l^2(\mathbb{Z}))$, the bounded operators on $l^2(\mathbb{Z})$. (Received March 07, 2008)