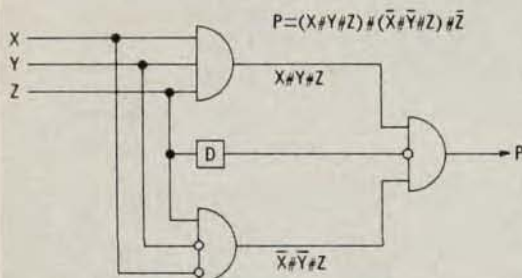


DERIVING MAJORITY LOGIC NETWORKS

FUND THM: $f(X,Y,Z) \equiv (X \cdot Y \cdot f_{xy}) \# (\bar{X} \cdot \bar{Y} \cdot f_{\bar{x}\bar{y}}) \# f_{xy}$

DEFINITIONS: $X \cdot Y \cdot Z \equiv \text{Maj}(X,Y,Z)$; $f_{xy} \equiv f(X,X,Z)$; $f_{\bar{x}\bar{y}} \equiv f(X,\bar{X},Z)$

DERIVATION: Let $f(X,Y,Z)$ be even-parity function P .
Then $f_{xy} \equiv \bar{Z}$ and $f_{\bar{x}\bar{y}} \equiv Z$ so



The fundamental theorem of majority-decision logic, a typical product of Univac's Mathematics and Logic Research Department, has practical as well as theoretical interest. The even-parity checker derived above from the fundamental theorem can be used to determine the parity of 2^n bits in n logic levels using only $\sum_{i=0}^{n-1} 3^i$ three-input majority gates.

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All qualified applicants considered regardless of race, creed, color or national origin.

for spent fuel elements will be in the basement. The reactor complex is expected to cost \$12.5 million and to take about two years to complete.

A prototype light-weight reactor has been constructed and successfully operated by North American Aviation's Atomics International Division for the Atomic Energy Commission's Snap 2 project. Designed to generate 50 kilowatts of heat for the production of auxiliary power for space vehicles, the reactor weighs 200 pounds without shielding, is fueled with a uranium-zirconium hydride alloy, and employs a core thirteen inches high by nine inches in diameter. The second such reactor designed and constructed for the AEC by North American, it is expected to generate three kilowatts of electricity when combined with a power conversion unit.

Research & Development

A new research division, composed initially of five departments, has been set up at Remington Rand Univac, St. Paul, Minn. S. M. Rubens, formerly manager of the physical research department, has been appointed director of research. Associate director and manager of a new department in biological and chemical physics is Victor Hicks. Other new department managers are Robert W. Olmen, materials research; William W. Davis, circuits research; William M. Overn, components research; and Charles D. Olson, electromagnetic-measurements research.

Union Carbide Corporation recently consolidated the activities of its Research Institute by moving its staff into a new laboratory building at Eastview, near Tarrytown, N. Y., thus bringing together under one roof work which had been dispersed among four Union Carbide laboratories in addition to space which had been leased elsewhere. A staff of sixty persons will be engaged in various research projects, including theoretical and experimental studies involving high-temperature materials, as well as work in organic chemistry, catalysis, biochemistry, and other fields.

Scientists at the Air Force Cambridge Research Laboratories in Bedford, Mass., have acquired a Dynamitron accelerator manufactured by Radiation Dynamics, Inc., Westbury, L. I., New York. The installation, which furnishes an extended range of operational parameters, from 0.6 to 1.2 Mev and from 10 μ a to 10ma, will be used for research on crystal lattice structures and elemental electronic components.

Research facilities available to Fairchild Semiconductor will more than double with the completion next year of the firm's new \$1.5 million research and development center, which is now under construction on a nine-acre site in Stanford Industrial Park near Palo Alto, California.