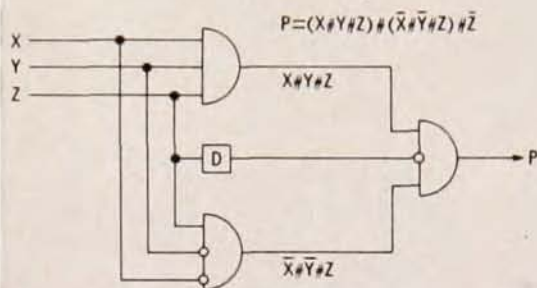


DERIVING MAJORITY LOGIC NETWORKS

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

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

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 $\sum_{i=1}^n 2^{i-1}$ three-input majority gates.

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Electric Company, Ltd., were opened recently on a site located a few miles west of Ottawa. The firm's Research and Development Laboratories will be devoted primarily to the fields of communications and electronics, with emphasis given to the special needs of Canada's telephone industry. Northern Electric's main fields of interest include telephone and data transmission, microwave radio communication, switching, and audio and video broadcasting.

Radiation Centers

Brookhaven National Laboratory has announced the establishment of a Radiation Development Center designed to advance the Atomic Energy Commission's program for process radiation development. The Center will serve the Laboratory's various research programs, and will be available on a limited basis to visiting scientists interested in investigating such applications of radiation energy as the production of plastics and chemicals, the cold sterilization of drugs and medical supplies, and the preservation of perishable foods.

The Center will include a high-intensity radiation development laboratory equipped with an irradiation cell for experimental work with radiation sources and a work-preparation cell where various types of sources will be prepared for experimental use. A shielded area will be provided for radiation sources not being used. The total level of radiation to be employed in this facility is approximately two million curies. Most of the sources will be of either cobalt-60 or cesium-137, although spent reactor fuel elements will also be used.

The Brookhaven Radiation Development Center is expected to be ready for occupancy in mid-1962. To operate the Center, a Radiation Division has been established within Brookhaven's Nuclear Engineering Department. Bernard Manowitz, associate head of the Chemistry and Chemical Engineering Division, will be in charge of the new Division.

A complex of radioisotope facilities at Oak Ridge National Laboratory, including ORNL's Fission Products Development Laboratory and the new Radioisotope Development Laboratory, has been placed under a single organizational roof with the establishment of a new Isotopes Development Center to be operated as part of the Atomic Energy Commission's isotopes program. Arthur F. Rupp, a specialist in radiochemical processes who has been on the ORNL staff since 1945, has been named director of the Center.

A broadened program of basic and advanced radioisotope research is to be carried out, and the Center will be responsible for a continuing evaluation of radiation and radioisotope technology on a world-wide basis and for providing data to governmental, industrial, educational, and private research groups to stimulate the application of radioisotope techniques. Plans have also been announced for inviting scientists from the United States and abroad to spend terms of one or two years at the Center on a research-participation basis.