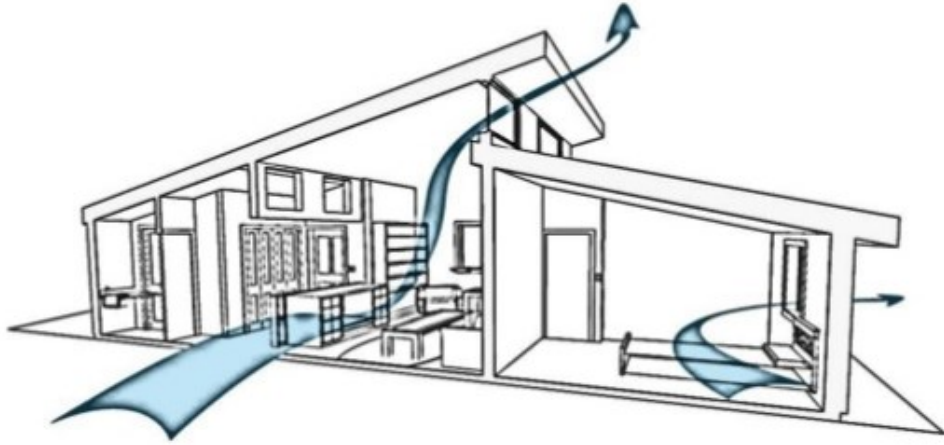


Building ventilation system

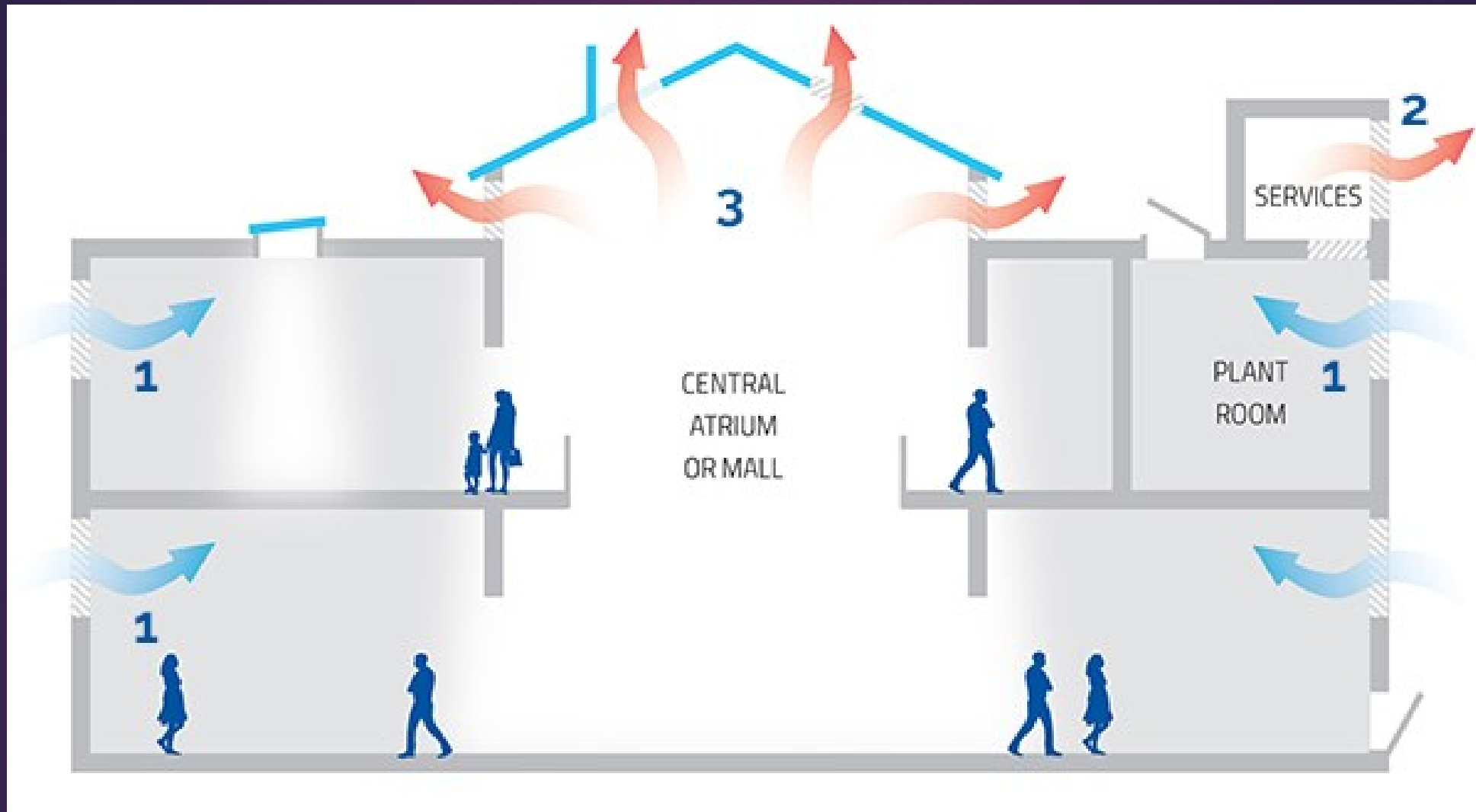
MK PENGHAWAAN DAN AKUSTIK BANGUNAN



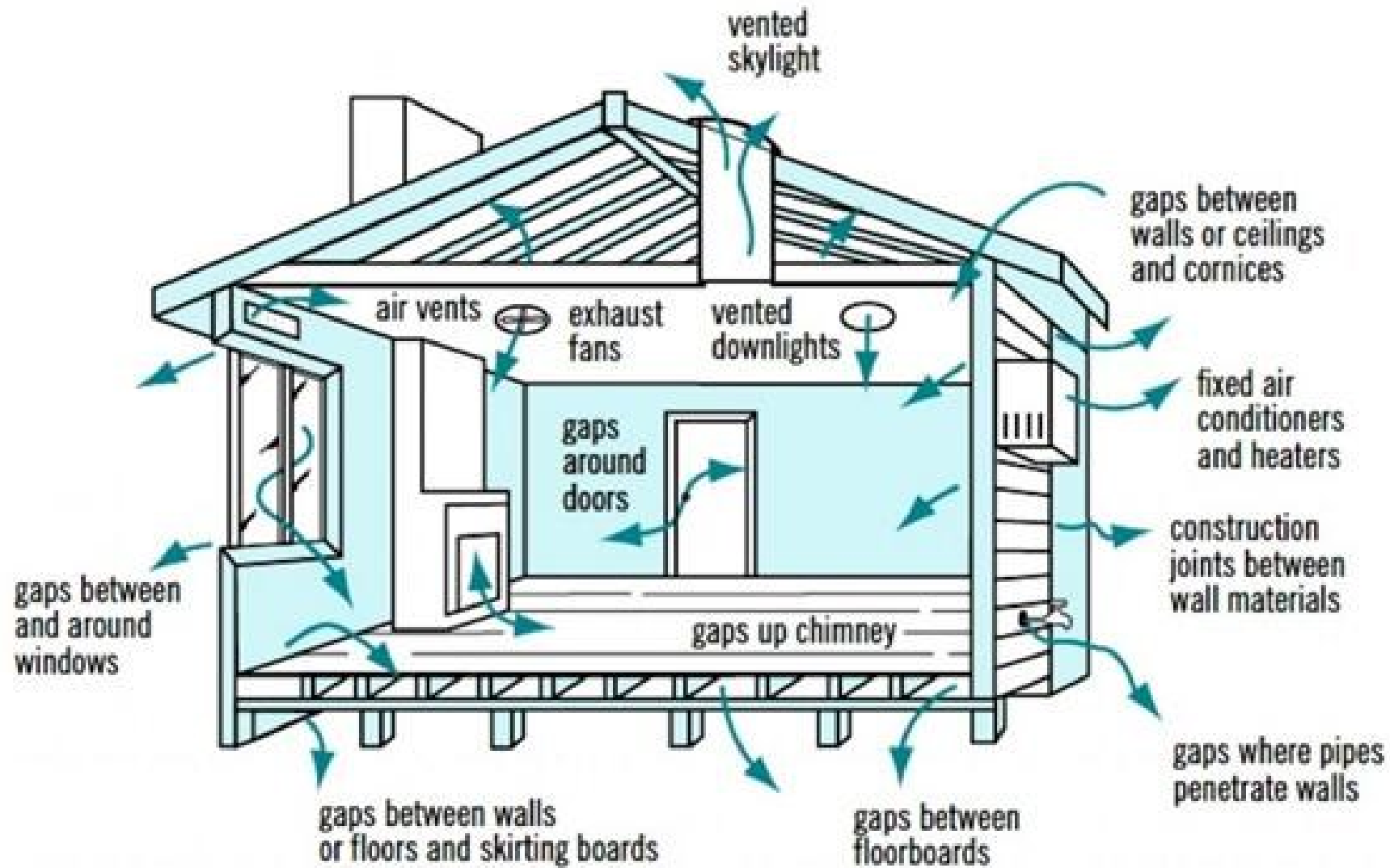
NATURAL VENTILATION

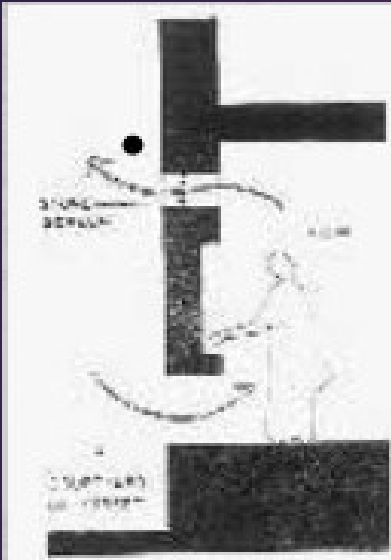
Presentation By:- An. Roopa²Chikkaiji

IS THE PROCESS OF SUPPLYING AIR TO AND REMOVING AIR FROM AN INDOOR SPACE WITHOUT USING MECHANICAL SYSTEMS. IT REFERS TO THE FLOW OF EXTERNAL AIR TO AN INDOOR SPACE AS A RESULT OF PRESSURE DIFFERENCES ARISING FROM NATURAL FORCES.

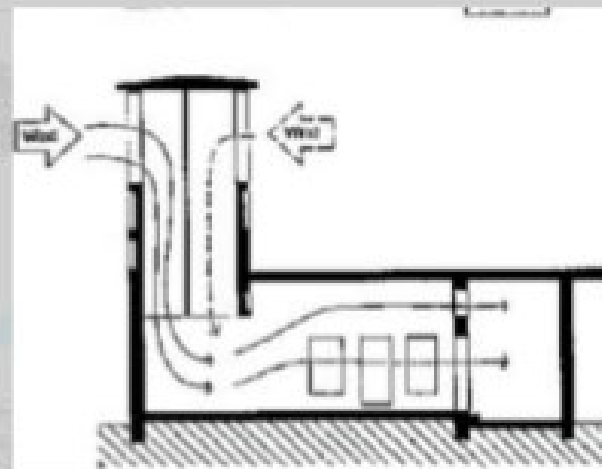


NATURAL VENTILATION SYSTEM

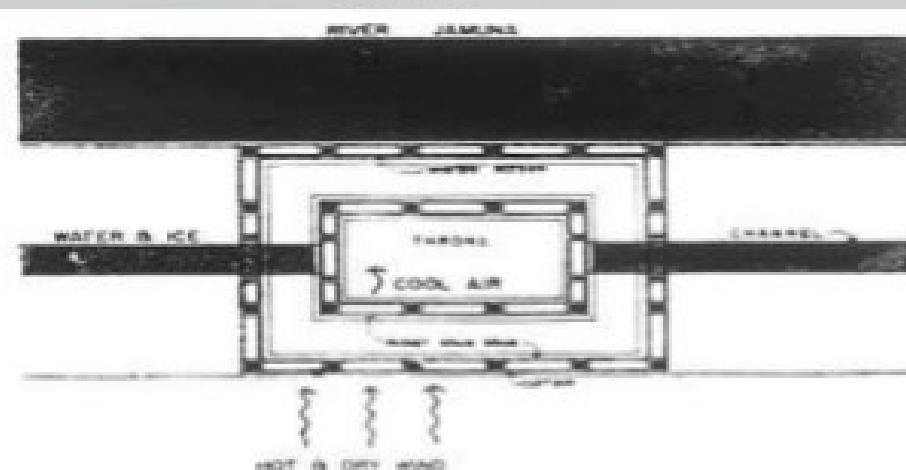
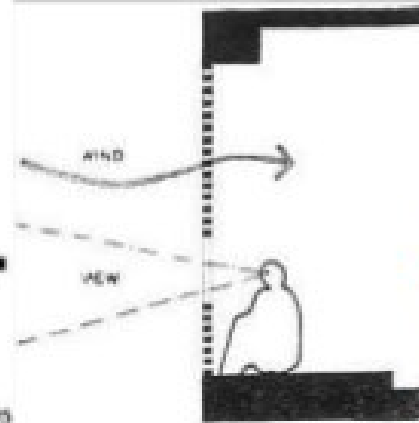




DOUBLE APERTURES
USED FOR ENSURING
VENTILATION
IN SHAHJAHANABAD
HOUSES



**MULTI-DIRECTIONAL
WINDCATCHER**



COLUMN COURTYARD COOLING SYSTEM-DIWAN E-KHAS, RED FORT, DELHI

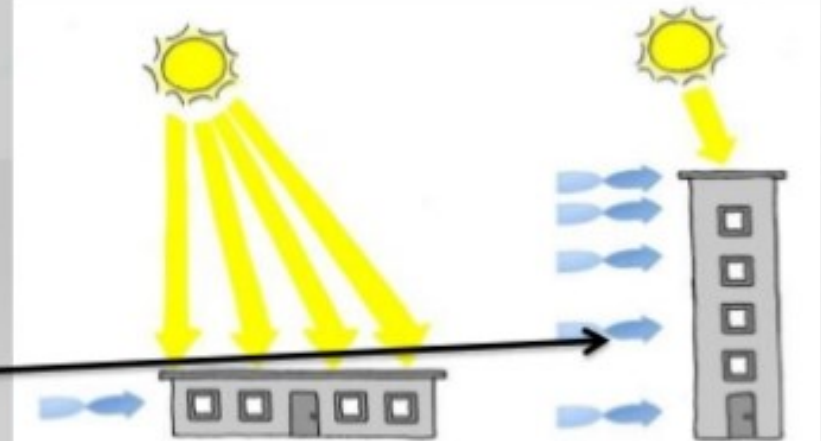
NATURAL VENTILATION EXTERNAL FEATURES:-

- ORIENTATION OF BUILDINGS
- POSITION OF OPENINGS
- CROSS VENTILATION
- SIZE OF OPENINGS
- OPENING TYPES

MASSING AND ORIENTATION OF BUILDING:-

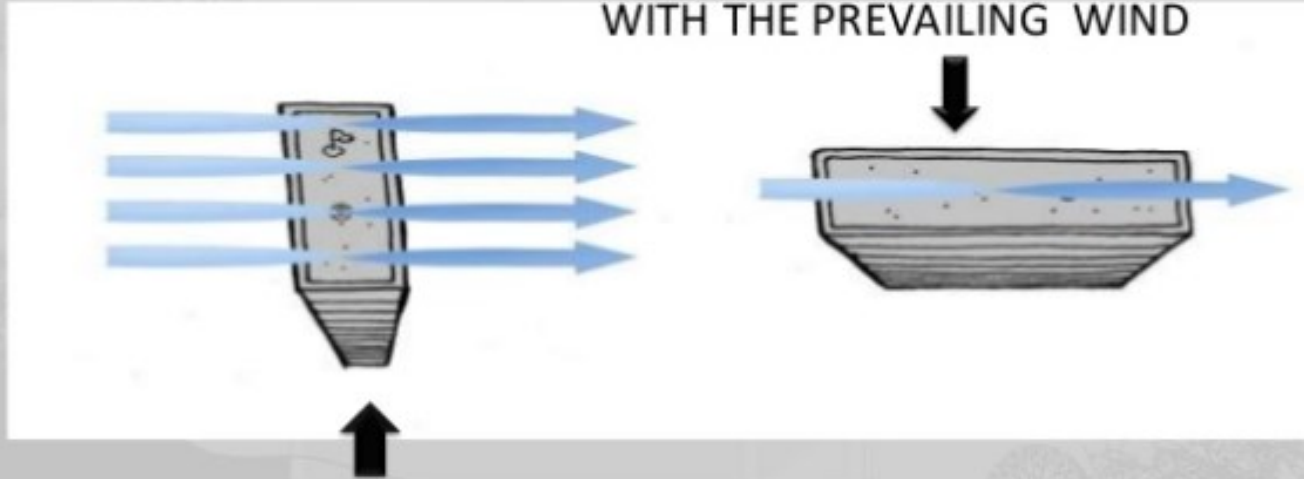
- AS A GENERAL RULE, THIN TALL BUILDINGS WILL ENCOURAGE NATURAL VENTILATION AND UTILIZE PREVAILING WINDS, CROSS VENTILATION, AND STACK EFFECT.
- **TALL BUILDINGS** ALSO INCREASE THE EFFECTIVENESS OF NATURAL VENTILATION, BECAUSE WIND SPEEDS ARE FASTER AT GREATER HEIGHTS

Tall buildings improve natural ventilation, and in lower latitudes reduce sun exposure.



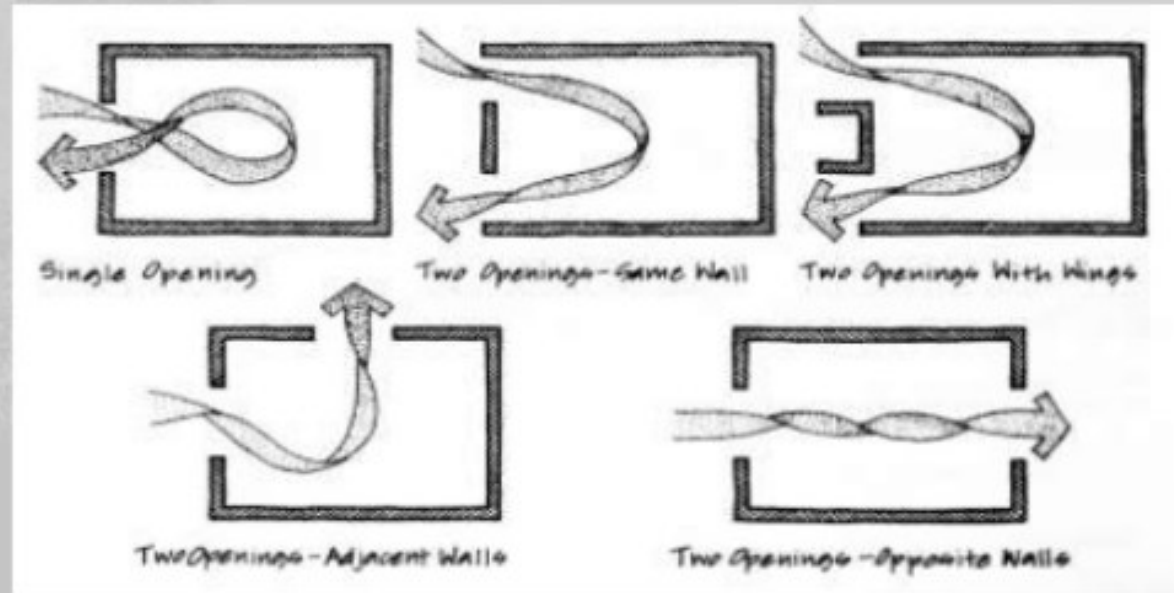
ORIENTATION

ORIENTING THE BUILDING SO
THAT THE SHORTER AXIS ALIGN
WITH THE PREVAILING WIND



WHILE ORIENTING IT
PERPENDICULAR TO PREVAILING
WINDS WILL PROVIDE THE LEAST
PASSIVE VENTILATION.

CROSS VENTILATION:-



WINDOWS OR VENTS PLACED ON OPPOSITE SIDES OF THE BUILDING GIVE NATURAL BREEZES A PATHWAY THROUGH THE STRUCTURE.

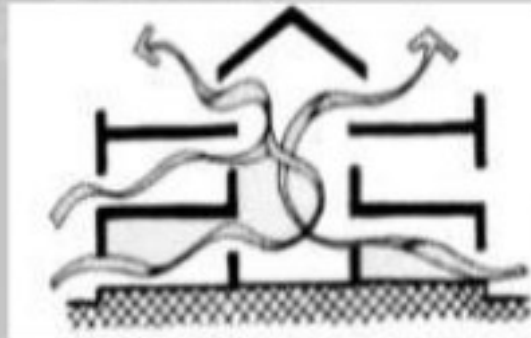
STACK VENTILATION SECTIONS :-



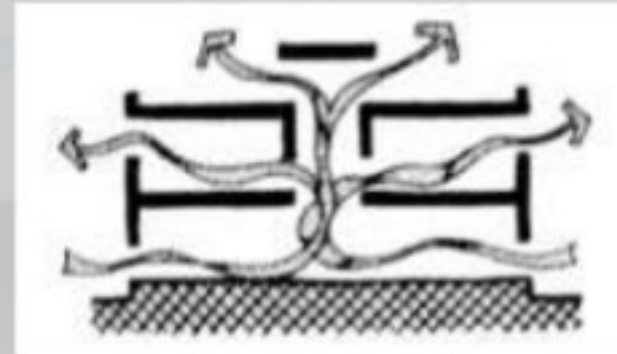
TALL ROOMS



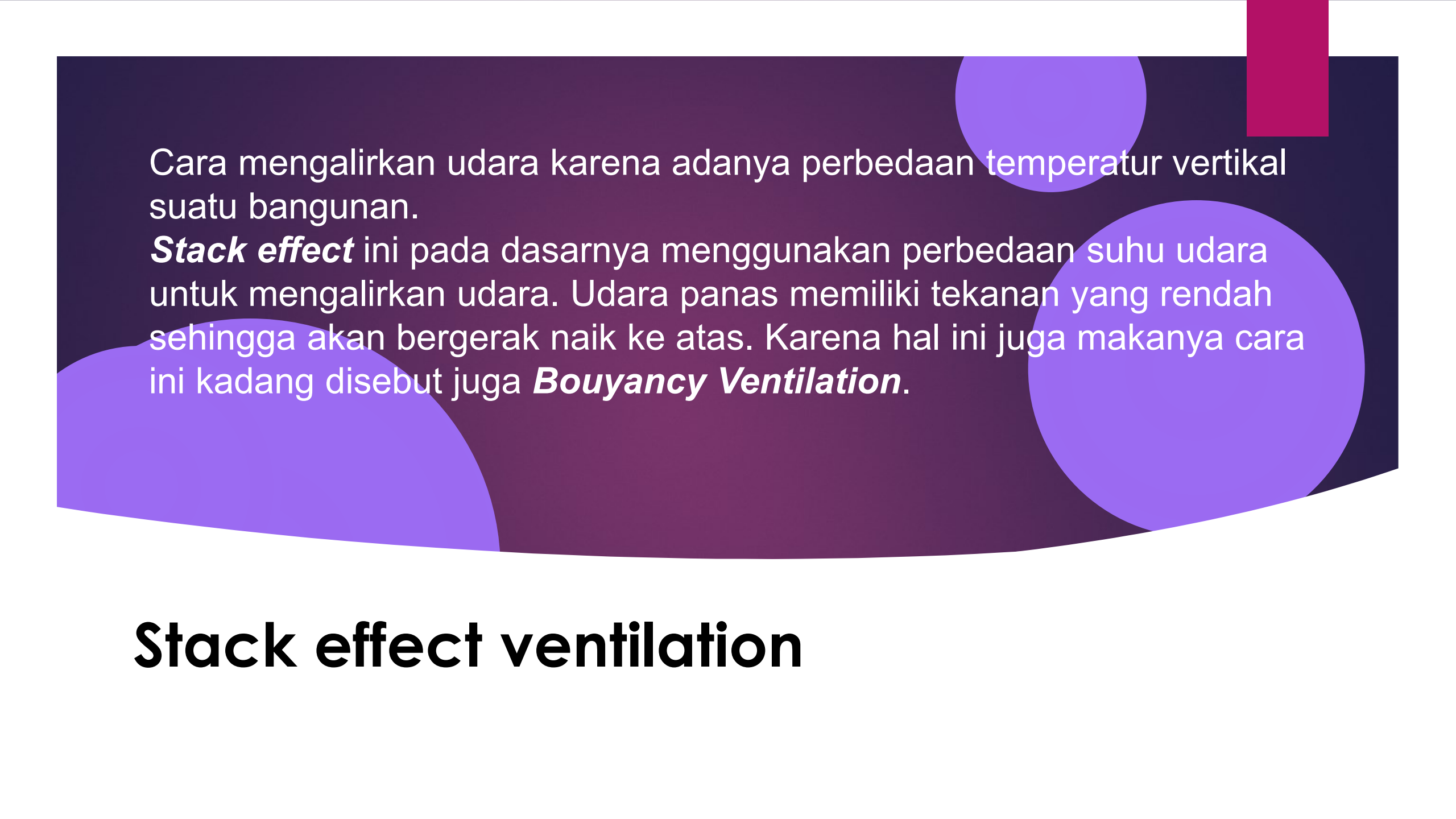
TALL ROOMS AT EDGE



TALL ROOMS WITHIN



STAIRS AS STACK



Cara mengalirkan udara karena adanya perbedaan temperatur vertikal suatu bangunan.

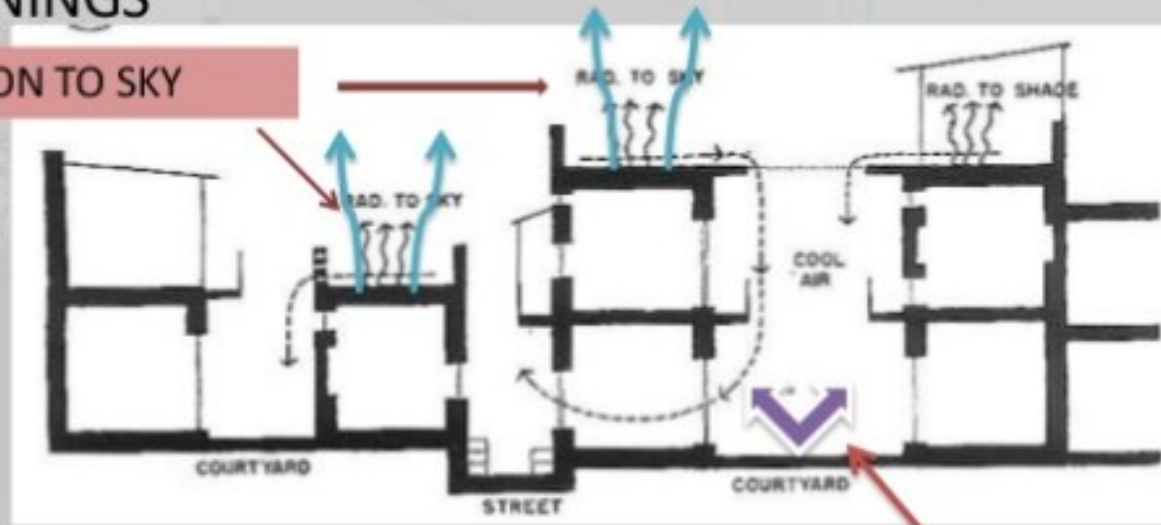
Stack effect ini pada dasarnya menggunakan perbedaan suhu udara untuk mengalirkan udara. Udara panas memiliki tekanan yang rendah sehingga akan bergerak naik ke atas. Karena hal ini juga makanya cara ini kadang disebut juga ***Bouyancy Ventilation***.

Stack effect ventilation

COURTYARD EFFECT:-

DUE TO INCIDENT SOLAR RADIATION IN A COURTYARD, AIR GETS WARMER AND RISES, COOL AIR FROM GROUND LEVEL FLOWS THROUGH THE LOWER OPENINGS

RADIATION TO SKY



LANDSCAPE OR WATER BODY

SECTION SHOWING COURTYARD EFFECT

COURTYARD IN MODERN BUILDING :-



VIEW



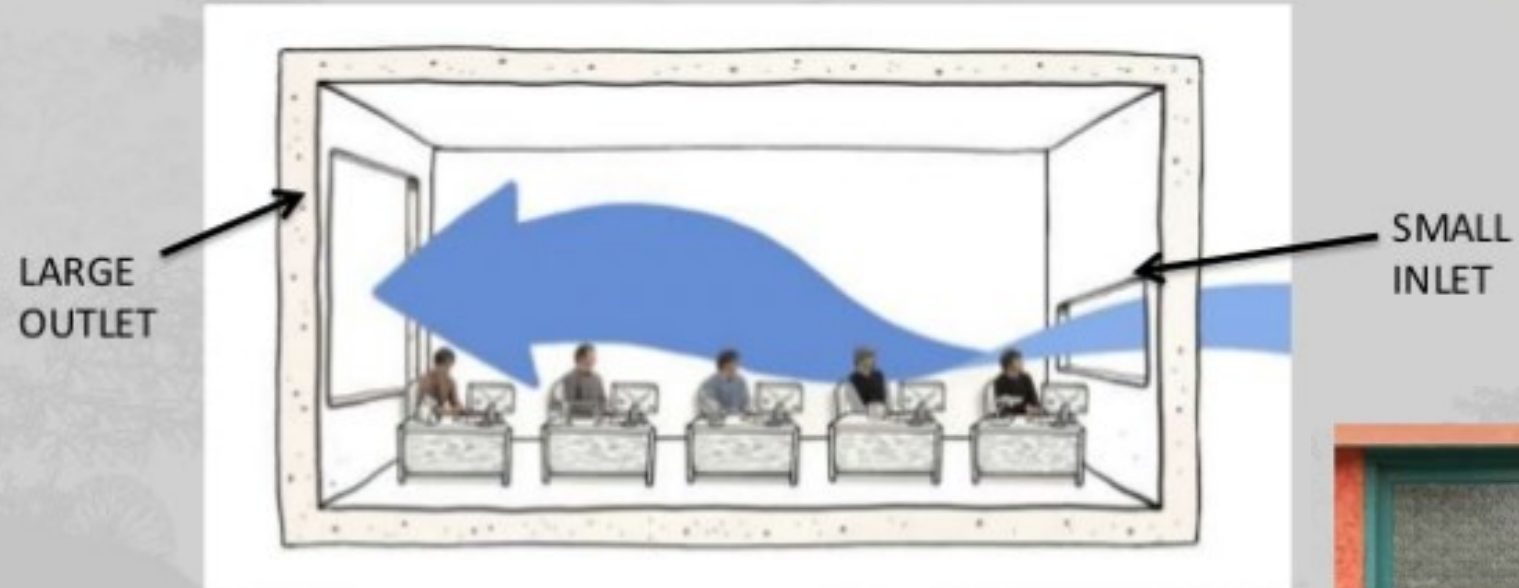
PLAN



SUNKEN COURTYARD INSIDE
THE BUILDING WITH WATER
BODY AND LANDSCAPE

AMERICAN INSTITUTE OF INDIAN STUDIES (GURGAON):-

OPENING SIZE:-



Pairing a large outlet with a small inlet increases incoming wind speed.



