

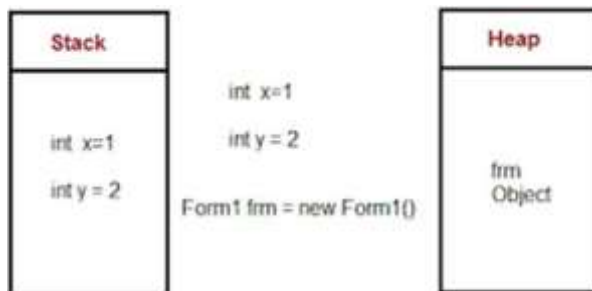


SNS COLLEGE OF TECHNOLOGY

(Autonomous)
COIMBATORE-35



Storage Organization



Return Value
Actual Parameters
Optional Control Link
Optional Access Link
Saved Machine Status
Local Data
Temporaries

Activation record

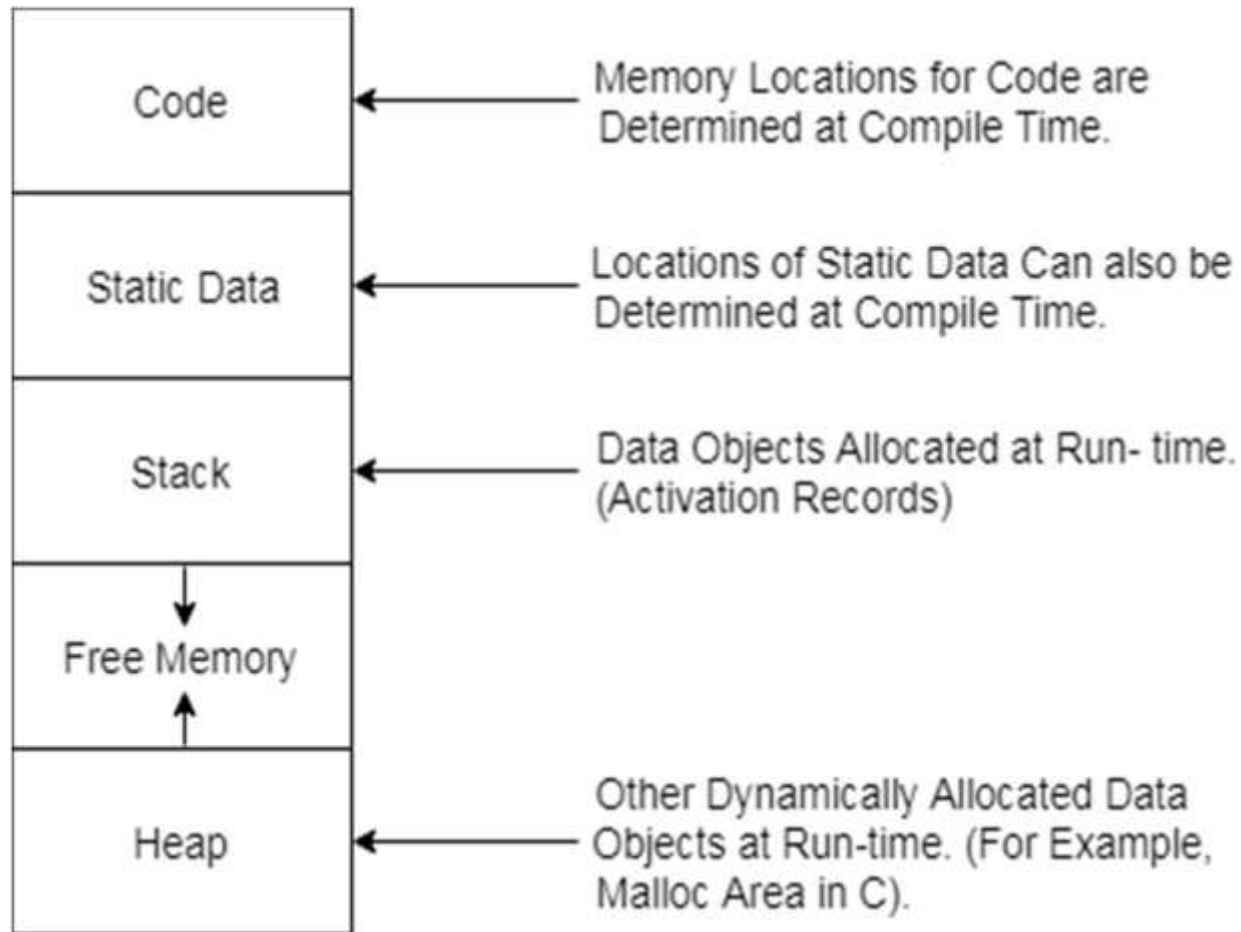


Storage Organization

- When the target program executes then it runs in its own logical address space in which the value of each program has a location.
- The logical address space is shared among the compiler, operating system and target machine for management and organization.
- The operating system is used to map the logical address into physical address which is usually spread throughout the memory.



Subdivision of Run-time Memory





Storage Organization

- Runtime storage comes into blocks, where a byte is used to show the smallest unit of addressable memory. Using the four bytes a machine word can form. Object of multi byte is stored in consecutive bytes and gives the first byte address.
- Run-time storage can be subdivide to hold the different components of an executing program:
 - Generated executable code
 - Static data objects
 - Dynamic data-object- heap
 - Automatic data objects- stack



Activation Record

- Control stack is a run time stack which is used to keep track of the live procedure activations i.e. it is used to find out the procedures whose execution have not been completed.
- When it is called (activation begins) then the procedure name will push on to the stack and when it returns (activation ends) then it will popped.
- Activation record is used to manage the information needed by a single execution of a procedure.
- An activation record is pushed into the stack when a procedure is called and it is popped when the control returns to the caller function.



Activation Record



Return value
Actual Parameters
Control Link
Access Link
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- **Return Value:** It is used by calling procedure to return a value to calling procedure.
- **Actual Parameter:** It is used by calling procedures to supply parameters to the called procedures.
- **Control Link:** It points to activation record of the caller.
- **Access Link:** It is used to refer to non-local data held in other activation records.
- **Saved Machine Status:** It holds the information about status of machine before the procedure is called.
- **Local Data:** It holds the data that is local to the execution of the procedure.
- **Temporaries:** It stores the value that arises in the evaluation of an expression.



Summarization