

# Course 6

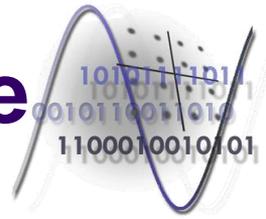
## Special functions for telephone calls.

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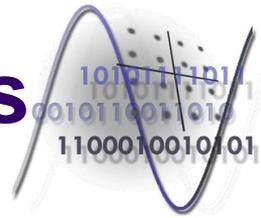


# Content of the course



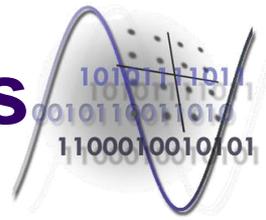
- General aspects;
  - Signaling of the special telephone call functions.
- Categories of special functions for telephone calls;
- Presentation of a few special functions for telephone calls;

# General aspects



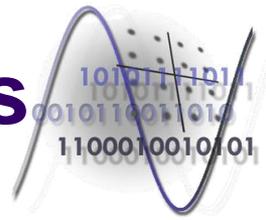
- A classical telephone network provides the functions necessary for set up, control and ending a telephone call;
  - There are provided the signaling operations for controlling and supervising the processes involved in the telephone transmission;
- Special functions added to the mentioned ones allows performing more complex operations in the telephone network;
  - These operations could improve significantly the quality of the service perceived by the user;
  - Some of the functions/operations are necessary in some special cases (for ex. in an office/business environment or in services supply centers).
  - Most of special call functions are implemented in PABX, but some of the functions are available also in public networks;
    - the set of the functions available in public networks is usually more limited.

# General aspects



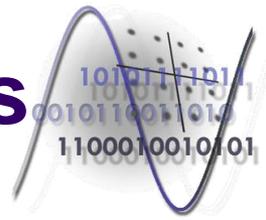
- Accessing the special functions:
  - When using analog phone devices:
    - usually are employed the \* symbol (usually for activation of a special function) and the # symbol ((usually for deactivation of a special function) if there are used analog phones with DTMF dialing;
    - if there are used phones with impulse dialing then substitution codes for the \* and # symbols can be used; for ex. 75 → \* and 76 → # in the case of Hipath 1100 PABX;
    - accessing special functions during a call in progress involves the FLASH impulse;
      - this impulse signals to the exchange the request generated by the user for accessing special functions;
      - detection of the FLASH impulse can be problematic when pulse dialing is used.
  - When using digital phone devices:
    - accessing the functions can be achieved by using DTMF tones;
    - accessing the functions can be achieved by using digital codes.

# General aspects



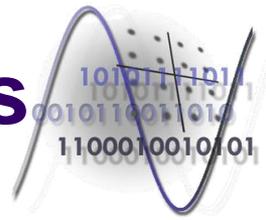
- The numbering plan of a PABX includes:
  - Extension numbers;
  - External lines (trunks) numbers;
  - Users groups numbers;
  - External lines groups numbers;
  - Virtual port numbers for:
    - voice mail;
    - FAX;
    - other telephone equipment.
  - This numbering plan is necessary for:
    - accessing some special functions,
    - but also for usual PBX operations.

# General aspects



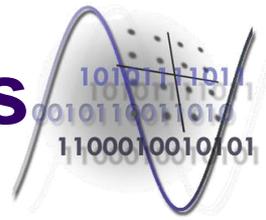
- Tones used for signaling calls using special functions:
  - Dial tone;
    - the network has accepted the access request;
    - represents a request for call information;
    - there is an internal dial tone of the PBX and there are dial tones received from the public network through the external lines.
  - Ringback tone;
    - called also ringing tone or signaling tone in some PBX systems;
    - signals that the connection is set up and the ringing signal is sent to the called terminal.
  - Busy tone;
    - indicates that the called terminal is busy (it is involved in a telephone call) or cannot be reached (for ex. invalid number).

# General aspects



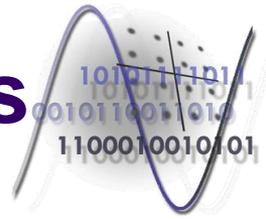
- External false signal;
  - dial tone (heard in the speaker) which can appear during external calls and which is not generated by the public network.
- Call waiting tone;
  - tone/signal indicating to the user involved in a telephone call that another telephone call was received.
- Confirmation tone;
  - indicates that the initiated procedure/function was accepted (by the PBX) and it was executed.
- Rejection tone;
  - indicates the initiation of an invalid procedure which was not accepted.
- Override tone;
  - alerts the user involved in a telephone call that the privacy of the call was violated, a new high priority call, received by the terminal, being connected over the already ongoing call.

# General aspects



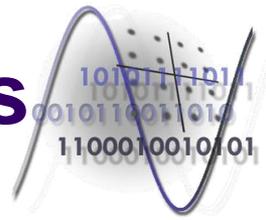
- Conference tone;
  - indicates that a new participant joined the conference;
  - indicates also, at some time intervals, that the conference connection is on.
- Recall confirmation tone;
  - confirms the activation of a callback procedure/function.
- Alert tone;
  - alerts the called terminal when the auto-answering features of telephone terminals with “hands free” capabilities are activated.
- Special dial tone;
  - indicates that some special functions are activated (night service, electronic lock, do not disturb, etc.);
  - the terminal cannot receive calls or has limited service access if this tone is generated.
- Auto-answering tone;
  - indicates the set up of a direct communication call to a system/digital phone

# Categories of special functions



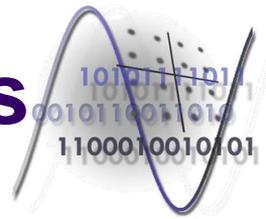
- Special functions used when making calls;
- Special functions used during calls;
- Special functions used for receiving calls;
- Miscellaneous functions;

# Functions used when making calls



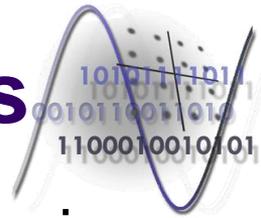
- Functions for external calls made by the users of a PABX:
  - Accessing of an external line is achieved usually by using the 0 key;
    - after dialing this key the PABX automatically selects a free external line;
    - it is received the dial tone of the external network and the external number is dialed;
      - if there are no free external lines then it is generated a busy tone.
  - Accessing automatically an external line:
    - this function ensures the automatic access of the terminal to an external line in the moment when the terminal goes OFF HOOK;
    - in order to perform an internal the FLASH signal has to generated after the handset is picked up.
      - the function is set usually from the programming interface of the PABX.

# Functions used when making calls



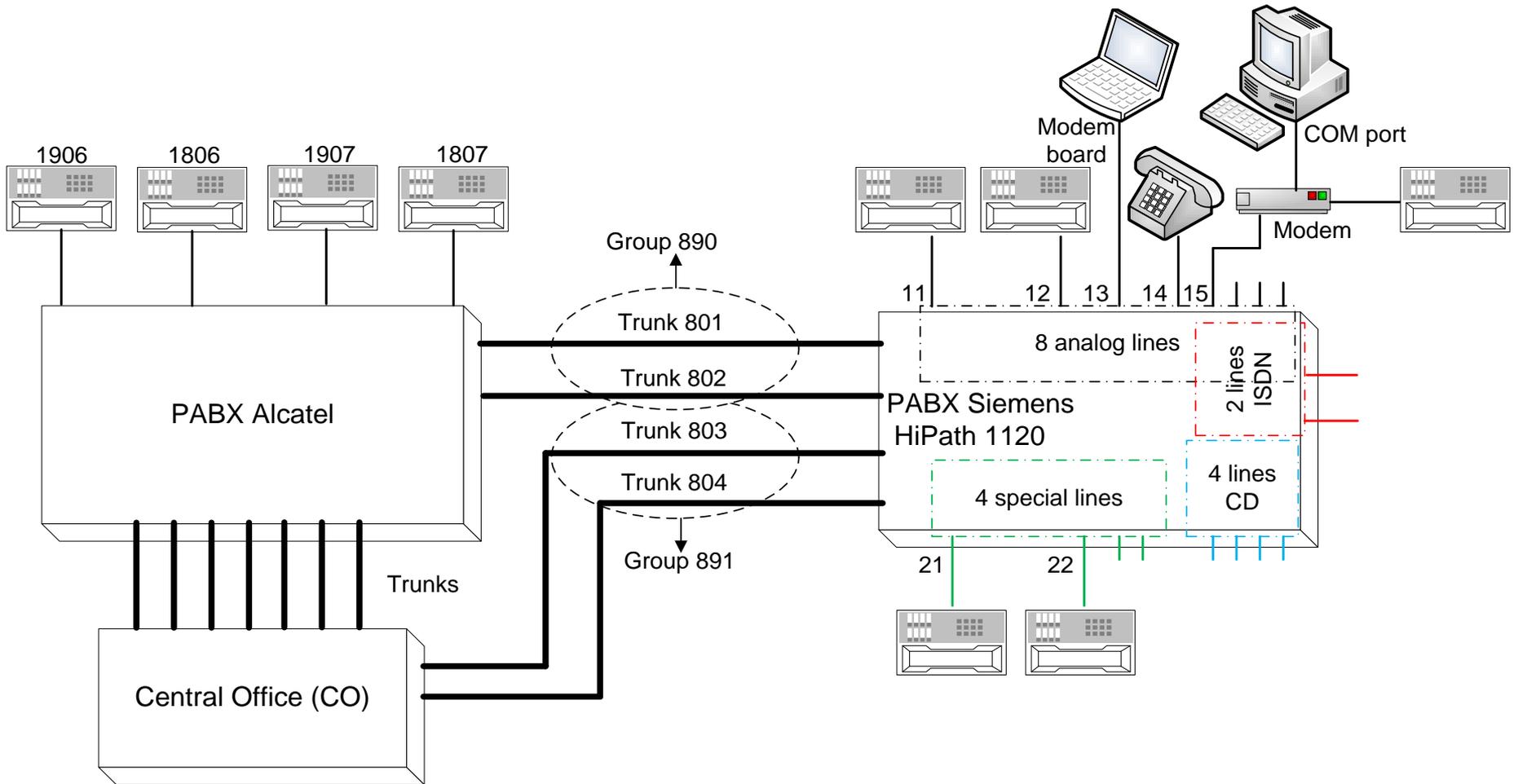
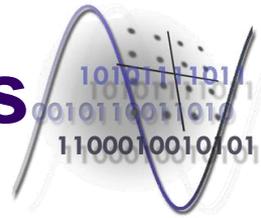
- Selection of a certain external line:
  - it is dialed the number of the external line (according to the numbering plan of the PABX);
  - when it is received the external dial tone it is dialed the external number;
- Using a group of external lines:
  - external lines can be divided in groups:
    - a group of lines make the connection between the PABX and another PABX or a CO;
  - it is dialed the number of the external lines group (according to the numbering plan of the PABX);
  - the PABX selects a free line from the group;
    - if there are no free lines it is selected a line from an overflow group;
    - if there is no free line in the overflow group a busy tone is generated.
  - the terminal receives the dial tone of the external network and the external number is dialed.
    - **if the PABX is connected to another PABX then after receiving the dial tone should be repeated the procedure for selection of an external line (for ex. dial 0);**
    - **the first PABX is called satellite PABX.**

# Functions used when making calls

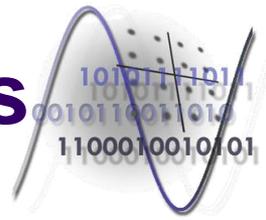


- Function for reservation of an external line for an extension;
  - It is activated when it is no external line available for the call;
  - PABX identifies the moment when an external line becomes available:
    - sends a specific ringing signal (different from the usual ringing signal) to the extension;
    - in the moment when the extension answers it is connected automatically to the external line and can be dialed the external number;
      - there are not necessary any steps for reserving the external lines;
      - the number of the external lines reservations activated in parallel is limited.
  - It exists the possibility of reserving an external line only for an extension;
    - the other extensions cannot use that external line;
    - the function is used to provide Internet access through dial up modem, the extension for which the line is reserved is equipped with a modem.

# Functions used when making calls

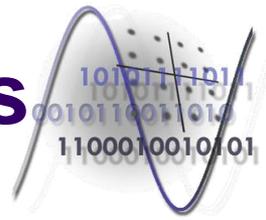


# Functions used when making calls



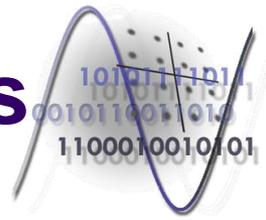
- Functions for routing and allowing external calls;
  - External calls performed by the users of a PABX represent a special category of calls because request payment to the operators of public networks;
    - cost reduction and control of these calls is very important.
  - Each extension has associated a timer which gives the time during which the extension is allowed to perform external calls:
    - can be used also counters if the public network generates metering impulses;
    - after the timer expires the external calls are not possible from that extension (until the timer is reset).
  - In order to optimize the costs the PABX exchanges implements the LCR (Least Cost Routing) function, applicable if the PABX has external lines with several public networks.

# Functions used when making calls



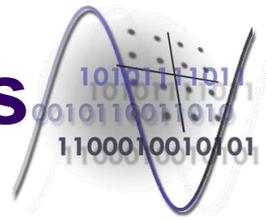
- The LCR function selects for each external call the public network operator with the lowest price:
  - the selection of the operator is achieved based on a table which gives for each day and each time interval the prices requested by the operators;
    - programming of the function and generation of tables with costs is made from the PABX interface.
  - if there are no available external lines to the operator selected by LCR it is sent a warning tone to the user (pay attention, it is not selected the operator with the best price);
  - there are functions which can be initiated by the user and which allow the deactivation of the LCR function for an ongoing call.
- The ACS (Alternative Carrier Selection) function (is similar to the LCR function) imposes the use of an imposed operator no matter which operator was selected by the user;
  - if the LCR or ACS functions are activated the user receives for external calls a false dial tone, generated internally by the PABX.

# Functions used when making calls



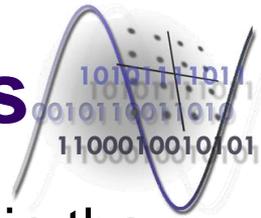
- Functions for PABX assisted speed dialing;
  - Speed dialing can be programmed from the telephone devices without intervention of the network;
  - The function in discussion is controlled by the PABX;
    - allows speed dialing of a larger number of telephone numbers when using simple terminals with reduced memory.
  - There are two implementation methods of this function:
    - there are assigned a number of slots (smaller than 10, usually 4-5) separately for each extension;
      - the user can define telephone numbers identified by a single digit;
      - it is generated a command to the PABX to dial the number stored at a given slot.
    - it is used a phone book stored in the PABX – the phone book can contain hundreds of numbers.
      - the user has to initiate the speed dialing function and to dial the number of the slot from the phone book which contains the telephone number which is desired to be dialed.

# Functions used when making calls



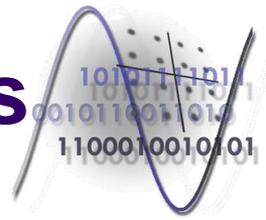
- The callback function;
  - The function allows performing automatically a call to an extension or external line which is not available;
    - the extension is busy or it is not answering;
    - the reservation of an external line is a particular case of the callback function.
  - The callback function acts in the following way:
    - if the called extension do not answer the callback function is activated: FLASH impulse followed by the activation code of the function and hang up;
    - if the extension for which the callback function is activated is used (it is enough to pick up the handset) then after the handset is replaced the PABX rings the first extension which wasn't able to perform the call;
    - if the extension answers the PABX rings the extension for which the callback function was activated and the function deactivates;
    - if the called extension answers the call is tacking place;
    - if the called extension doesn't answer the callback function can be activated again.

# Functions used when making calls



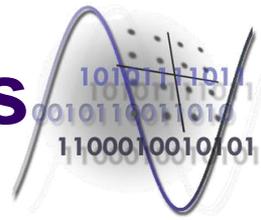
- If the extension called is busy the callback function acts in the following way:
  - if the called extension is busy it is activated the callback function: FLASH impulse followed by the activation code of the function and hang up;
  - in the moment when the called extension goes in ON HOOK (the call ended) the PABX rings the first extension which wasn't able to perform the call;
  - if the first extension answers the PABX rings the extension for which the callback function was activated;
  - if the called extension answers the call is tacking place;
  - if the called extension doesn't answer can be activated again the callback function;
    - a single callback operation can be activated for an extension;
    - the activation of the callback function for a second time erases the first activation;
    - if the public network offers support for such functions and the PABX has the necessary capabilities the callback function can be activated when an external number is not answering or it is busy.

# Functions used when making calls



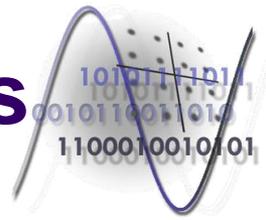
- The urgent call function;
  - The function allows to announce a terminal involved in a call that it is another call waiting (which could be urgent):
    - if terminal A is busy and terminal B is calling terminal A, then terminal B receives busy tone;
    - if B doesn't hang up for a few seconds (5-10s) it receives a new ring back tone and terminal A receives the call waiting tone;
    - if A hangs up it receives a ringing signal (the call from B);
    - terminal A can place in hold the ongoing call and can take the call from B.

# Functions used when making calls



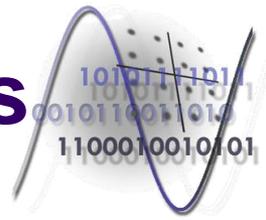
- The override function;
  - The function allows to the user of an extension with appropriate rights to “connect” over an ongoing call:
    - for ex. terminal A and B are in call and terminal C calls A, which is busy;
    - if C has the override right it can activate the function (FLASH impulse followed by the function activation code) and it will connect over the A – B connection (the function is similar to the conference function);
    - a specific tone is sent by the PABX to terminals A and B in order to announce the connection of terminal C over the ongoing call;
    - a modified version of this function is the silent monitoring:
      - a terminal which has appropriate rights can connect over an ongoing call and the users involved in the call are not announced;
      - this function cannot be activated on any PABX due to the ethical and legal issues raised by the use of this function.

# Functions used when making calls



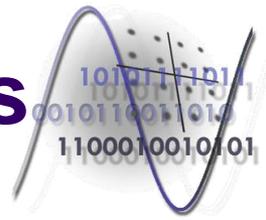
- The hotline/warmline function;
  - If the hotline function is activated for an extension, then after the handset is lifted a preprogrammed number is called automatically by the PBX;
  - It is not possible to call any other number, but the terminal can receive calls;
  - In the case of warmline function it is possible to call any number, but this operation has to take place in a predefined time interval (a few seconds), otherwise it is called automatically, by the PBX, a preprogrammed number.
- The service console call function;
  - It is achieved by dialing a dedicated key, for example 9;
  - If it is not defined a service console it is generated a busy tone.

# Functions used when making calls



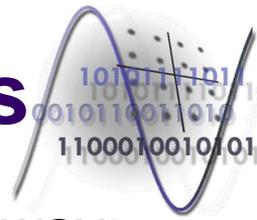
- The direct call function;
  - Can be activated only if the called terminal is a system phone with hands free features (terminal called also speakerphone);
  - After the activation of the function has to be specified the number of the recipient and in this moment the telephone connection is established, without sending the ringing signal;
    - the called terminal responds automatically and activates the speaker;
    - the function is not executed if the called terminal is busy;
    - if the called terminal is not a system phone it will be established a normal call, meaning the called terminal rings normally;
    - the set up of a direct call could necessitate the preliminary programming of the recipient terminal.

# Functions used when making calls



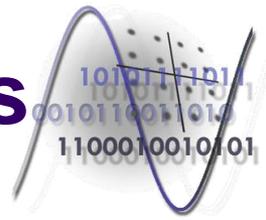
- The DISA (Direct Inward System Access) function;
  - The function allows to access the extension of a PABX from the public network, on the external lines of the PABX, and to perform external calls or to activate some functions of the PABX like the user would be in the PABX network and he would use the extension accessed by the DISA function;
  - The use of this function requires to configure one or several external lines as DISA lines (DISA trunks) and to grant DISA right for the extension accessed from the public network;
  - The number of concurrent DISA calls is limited and depends on the capacity of the PABX.

# Functions used when making calls



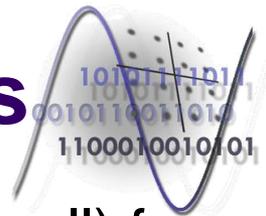
- The use of the DISA function is realized in the following way:
  - the user located in an external network calls the PABX exchange on an external line configured as DISA line;
  - the user receives a dial tone generated by the PABX and dials the number of the extension which he wants to access followed by a personal password of 4-5 digits.
  - if the DISA working mode is accepted the user receives a dial tone and he can perform external calls originated from the PABX or he can activate various functions of the PABX (from the external network);
  - external calls performed passing through the PABX will be billed to the PABX network and not to the user located in the external network:
    - for ex. an employee has to perform a long distance or international call in the interest of the company when he is not in the office – by using this function the long distance/international call will take place like the user would use the PABX extension and the costs will be supported by the operator of the PABX network.
  - the DISA function allows to a user which is not in the PABX network to participate to local teleconferences set up in the PABX network.

# Functions used during calls



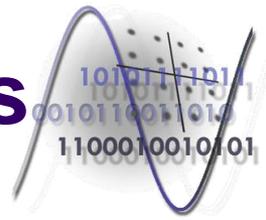
- The consultation function and the toggle function;
  - The consultation function allows to a terminal, A, involved in a telephone call (with terminal B) to consult a third party:
    - accessing the function is done with FLASH impulse and after that (it is received dial tone and) it is dialed the number of the extension/terminal which will be consulted;
    - the initial (A - B) connection is placed in hold and switch back to the initial call happens in the moment when the consulted extension hangs up or after an explicit request sent by extension A to PABX (FLASH impulse followed by the code of the function which performs the switch back to the call placed in hold).

# Functions used during calls



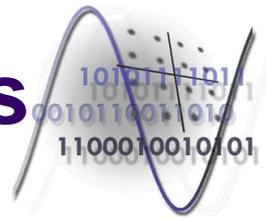
- The toggle function allows to place in hold a call (A – B call) from one of the terminals involved and to switch to another call:
  - for ex. terminal A places A - B call in hold and rings a third terminal (for ex. terminal C);
  - terminal A can switch back to the initial call (A - B), and place the third terminal (C) in hold;
  - the process can continue and a terminal can “jump” from one call/connection to another, while the connection which is left is place in hold:
    - (A – B, hold C ; A – C, hold B).

# Functions used during calls



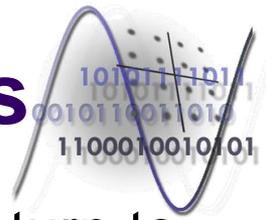
- The transfer function;
  - The function allows to an extension to transfer a call to another extension or to an external number;
    - the call can be a local one or an external one.
  - The function is accessed, by the terminal performing the transfer, using the FLASH impulse, and after that (it is received dial tone, and) it is dialed the local or external number to which the call will be transferred;
    - in order to transfer the call to an external number it is necessary to grant this right to the extension performing the transfer.
  - After the achievement of the transfer, the extension which initiated the function hangs up;
  - If the terminal which is the recipient of the transfer doesn't answer or is busy, the initial connection can be re-established by sending the appropriate commands to the PABX.

# Functions used during calls



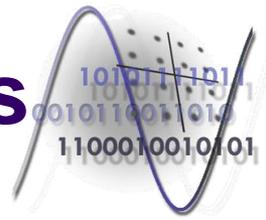
- The conference function;
  - The PABX exchanges allow to set up conferences with a limited number of users, extensions and external users connected to the PABX on the external lines (the number of the participants depends on the capacity of the PABX).
    - the number of conferences which can take place in parallel depends on the capacity of the PABX;
    - a terminal can be involved only in a single conference.
  - The conference is initiated by a master extension and includes a number of slaves (extensions and external numbers);
    - the external numbers cannot be master.
  - The master terminal can place the conference in hold and can receive or can make another call and after that it can return to the conference or can switch (toggle) between the conference and the another call;

# Functions used during calls



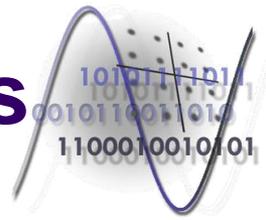
- A slave terminal can answer a call waiting, but cannot return to the conference;
- The master can end the conference by sending to the PABX a specific code;
- If the master leaves the conference it will be selected automatically another master (for ex. the last extension added to the conference);
- During the conference, at some time intervals, it is generated a specific tone which indicates that the conference is active;
  - the same tone indicates that a new terminal is added to the conference.

# Functions used during calls



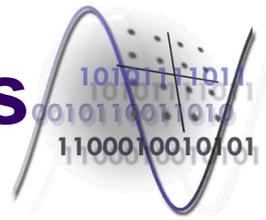
- The call parking function;
  - The function allows to place in hold a number of internal or external calls (for ex. 10 calls);
    - each call is “parked” at a separate slot, from where it can be recovered by any extension (not only by the extension which parked the call);
      - if the parking slot is busy a rejection tone will be generated.
    - the call parking can be performed for a limited time interval:
      - after a dedicated timer expires the parked call is directed to the extension which performed the parking – the extension rings;
      - the parked calls are lost if they can’t be retrieved by the extension who parked the calls.
- The function for generating FLASH on external analog lines;
  - On analog external lines can be activated special functions offered by the PABX or the CO to which the PABX is connected;
    - it is necessary to generate a FLASH impulse on the external analog lines;
      - the impulse is generated by the PABX when a specific command is received from the extension.

# Functions used during calls



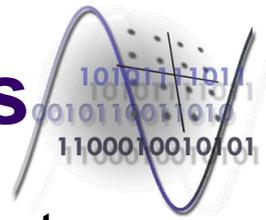
- The suffix dialing function;
  - The function can be used when the extension is used in services which require to dial some codes from the keypad of the phone in order to implement the user – service interaction;
    - some of these codes can be mistaken with commands sent by the extension to the PABX;
    - if it is dialed a specific code then the PABX will not interpret the following codes as commands;
    - the function is not necessary, usually, to access interactive services with the help of the phone, most of the PABX programming codes being different from the codes used for interaction with services offered in the telephone network.

# Functions used for receiving calls



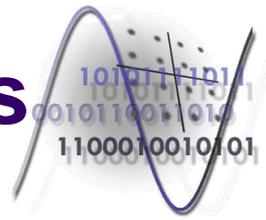
- The function for taking a call waiting;
  - If a terminal receives a call when it is already involved in a call, situation signaled by a specific tone, then the terminal can take this new call by sending a specific code to the PABX:
    - FLASH impulse followed by the code for taking/answering the call waiting;
    - the first call is placed in hold and the terminal can switch back to this call by activating specific functions or it can switch between the two calls using the toggle function.
- The do not disturb function;
  - The function blocks the calls intended to the terminal which has this function activated;
    - the terminal cannot be used as a recipient of call forwarding operations and cannot activate the callback function;
    - the dial tone is modified in order to warn the user that the terminal cannot receive calls; the terminal can perform calls normally.

# Functions used for receiving calls



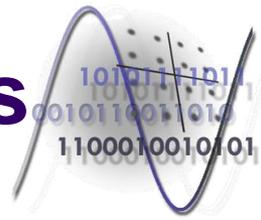
- The function for answering calls intended to a group or to an individual extension;
  - The function allows to answer a call sent to an extension which is part of a call group, more exactly pickup group;
    - the call can be answered by any extension of the group.
  - The function allows also to answer a call which is intended to another terminal, which is not answering:
    - for ex. the phone from the neighbor table/office rings and nobody answers.

# Functions used for receiving calls



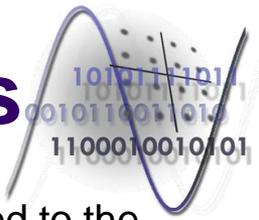
- Functions for call groups;
  - Call groups are formed of extensions which are associated in some way (answer calls related to a service);
  - The role of the groups is to prevent that calls are not answered if some extensions are unavailable (no answer or busy);
  - The call groups are identified by special numbers and can be identified the following groups:
    - Call group:
      - a call sent to the group (identified by a dedicated number) rings all extensions of the group;
      - any extension (but only one) of the group can answer the call;
      - the group members are defined in the programming interface of the PABX, but there are functions which allow extensions to associate to a group or to leave a group or to declare themselves available/unavailable for a group;
      - can be defined several groups (for ex. 10 in the case on small/medium capacity PABX) and an extension could be member of several groups.

# Functions used for receiving calls



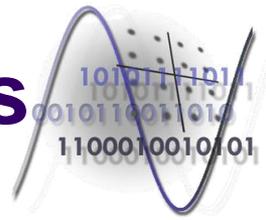
- Hunt grup:
  - a call sent to a group (identified by a dedicated number) rings the extensions from the group by turn (each extension rings a time period and if it doesn't answer the next extension of the group is called);
  - any extension (but only one) of the group can answer the call;
  - there are two ways to search the extensions of the group:
    - linear search: practically it is about a cyclic search (if nobody answers the group is searched again), but when a new call is received by the group the ringing signal is sent to the first extension of the group (the extension in the first position in the table which defines the members of the group), and if it doesn't answer the next extension is searched;
    - cyclic search: when a new call is received by the group, first rings the extension located next (in the table which defines the members of the group) the extension which answered the previous call.
- Uniform Call Distribution - UCD group:
  - it is composed of a limited number of extensions (several extensions or tens of extensions in the case of small capacity, respectively average capacity PABXs), called agents, which answer calls sent to a specific number identifying the group;
  - can be defined several groups (for ex. 10 in the case of small/medium capacity PABXs);

# Functions used for receiving calls



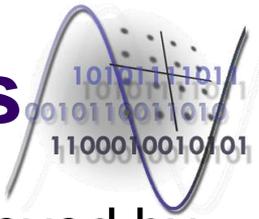
- the main characteristic of this group is that the call sent to the group is routed to the extension which was inactive for the largest time period;
- the UCD group can be used to implement voice mail and call center functions. Some of the UCD group characteristics are the following:
  - the agents should register in the group, meaning that it is not enough to declare the membership of the extension to the group, but it is necessary to login in the group;
  - an agent could be member of several UCD groups, but at a moment can login only in a single UCD group;
  - call forwarding is not possible for agents registered in an UCD group;
  - the registered agents should declare themselves available in order to receive calls; if an agent declares himself unavailable then he doesn't receive calls, even it is registered;
  - agents can suspend temporarily the reception of calls (for ex. they perform other tasks for serving the clients);
  - there are defined several timers which give: how long the clients can wait in the queue, the pause time of the agent between two consecutive calls, how long an agent rings if he doesn't answer, etc.;
  - it is defined also the maximum length of the waiting queue and the overflow extension or extensions.

# Functions used for receiving calls



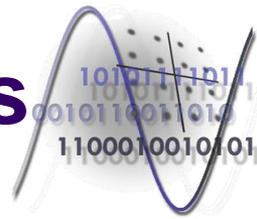
- Call forwarding functions;
  - Forwarding of a call received by an extension to another extension or to an external number (the external number should include the trunk or trunk group number), to a call group, to a voice mail (EVM – Entry Voice Mail) or to a FAX module can be performed in the following ways:
    - unconditional call forwarding: the calls received by the terminal in discussion are automatically forwarded to another recipient:
      - the dial tone is modified in order to indicate to the user that the call forwarding is active and calls cannot be received.
    - call forwarding when the extension doesn't answer or it is busy:
      - the calls received by the extension are forwarded to another recipient if the extension doesn't answer after a number of calls or if it is involved in another call.
    - conditional call forwarding according to caller ID, call type (internal or external), day of week and time of the call:
      - activation of the function can be done only from the programming interface of the PABX.

# Functions used for receiving calls



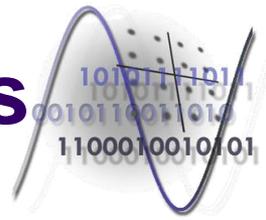
- Deactivation of the call forwarding functions can be achieved by sending specific codes to PABX;
- Can be defined a chain of call forwarding:
  - the terminal to which the call is forwarded is forwarding the call at his turn to another recipient:
    - the number of call forwarding steps from the chain is limited (2-3 steps).
- Function for configuring the answer to external calls;
  - Selection of the extension which receives a call on an external line can be achieved in the following way:
    - deactivated mode:
      - a call received on an external line is forwarded to a group of predefined extensions (first attendant) (all extensions are ringing);
      - if no extension answers the call will be forwarded, after a predefined time period, to a second group of extensions (delayed/second attendant);
      - no address signaling is necessary between the CO and PABX (or PABX and PABX).

# Functions used for receiving calls



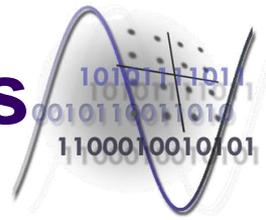
- FAX/DID Direct Inward Dialing mode:
  - a call received on an external line should include an address signaling which allows the selection of the called extension;
  - the address signaling could be automatic (the called number include the extension number) or could be manual; in the latter case the PABX asks the external user to dial the number of the extension:
    - it is generated an automatic message which tells to the external user how to select a given extension.
- setting of the mode how external calls are answered can be achieved from the programming interface of the PABX.
- Other functions;
  - Collect call barring:
    - activation of this function is achieved in a different way for extensions, UCD groups and for FAX/DID calls.
  - Overflow Extension:
    - it is defined in relation to different functions and represents an extension to which the call is routed if the called extension/extensions are not available.

# Miscellaneous functions



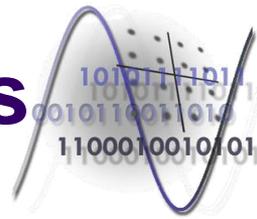
- Electronic lock function;
  - The function allows to lock an extension by using a 4 – 5 digit password;
    - some calls (it is about especially external calls) cannot be performed after the activation of the electronic lock;
      - it is prevented the unauthorized access to some services;
      - to each extension can be associated a service class and after the activation of the lock the extension can access only the services specified by the class of service (or alternatively it is possible to block the access to some services specified by the class of service);
      - to allow free access of all services offered by the PABX it is necessary to deactivate the lock.
- Music on hold function;
  - The function allows to enable the sending of a preprogrammed music signal on the external lines placed on hold.

# Miscellaneous functions



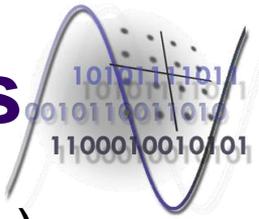
- Function for setting the language/country;
  - The function allows to set the language used to program the PABX as well as the activation or changing of some features (or parameters) characteristic to some countries.
- Alarm clock function;
  - The function allows to set some warnings sent to a given extension at some time moments (day and hour) or after a time period from the function activation moment:
    - the extension will ring at the time moments programmed by the alarm clock function an imposed time interval or until the hand set is lifted.
- Function for enabling the call waiting tone;
  - The function allows to enable or to block the call waiting tone for an extension involved in a call and which receives a new call;
    - if the call waiting tone is blocked then the extension involved in a call is not warned about a new call waiting to be answered.

# Miscellaneous functions



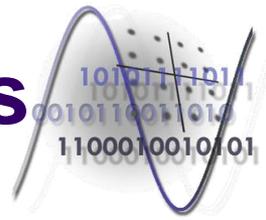
- Class of Service – COS changeover function;
  - The Class of service establishes for each extension the services which can be accessed or cannot be accessed;
    - usually it is about external numbers which can be called or not on the external lines (the mentioned numbers are specified separately for each external line);
    - the COS can be defined with the help of some lists/tables with allowed numbers (permission lists) or forbidden numbers (prohibition lists);
  - The function allows to transfer the COS of an extension to another extension, but only for a single call:
    - after the call ends it returns to the situation before the call;
    - the COS changeover requires to give the password associated to the terminal whose COS is transferred;
      - this terminal should have activated the COS changeover right.
    - the function allows to users having greater rights to access some services from extensions with lower/limited rights for a single call.

# Miscellaneous functions



- Room monitoring function (Room monitor / Babyphone);
  - The function allows to use the microphone of an extension to audio monitoring of a room (for ex. the room of a baby):
    - the handset of the extension used for monitoring is lifted and it is activated the function and the handset remains lifted;
      - if it handset is replaced the function is deactivated.
    - in the moment when the extension is called the connection is realized automatically, without sending ringing signal;
      - it doesn't matter that the handset is lifted.
  - Night service function;
    - The function forwards all the calls to a specified extension, when it is activated (for ex. all the calls received after business hours are forwarded to a certain extension).

# Miscellaneous functions



- System programming activation function;
  - The function allows the activation of the PABX programming functionalities (for ex. the analog or digital extension connected to the first analog/digital port could be used for system programming).
- FLASH period detection function for extensions;
  - The function allows to measure the duration of the FLASH impulse for analog extensions;
    - the function is important for ensuring the correct detection of the FLASH impulses generated by analog extensions;
      - usually the analog phones generate FLASH impulses with a duration between 90ms and 1s, according to the setting of the phone.