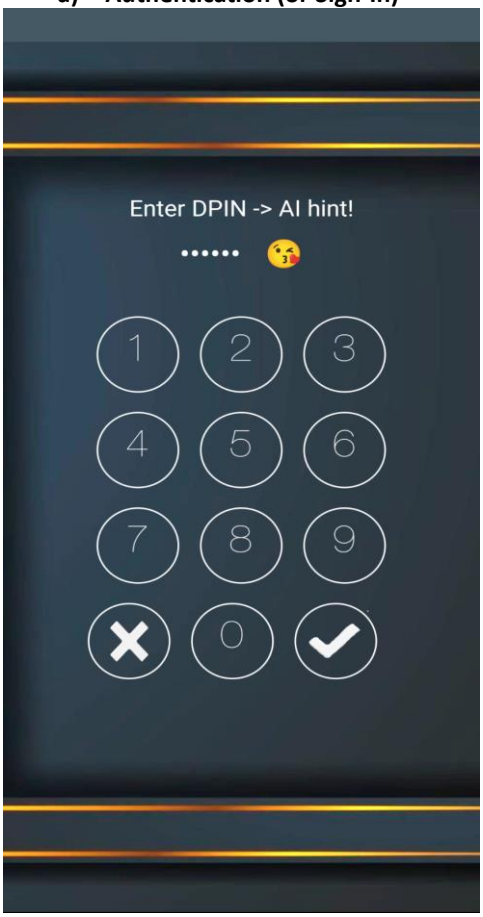
Dear Participant,

We appreciate your participation in this software testing survey, which will greatly help improving our project considering the public opinions. Before installing the HDynPIN Android app, please read the following guidelines:

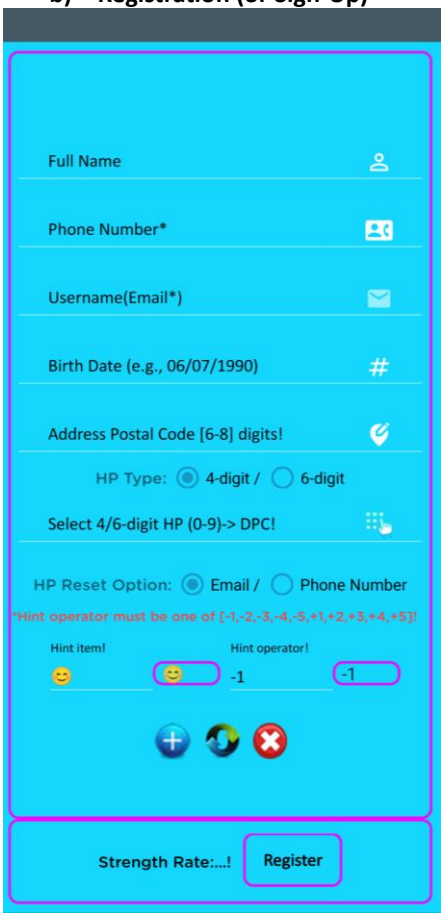
Download link of Android App: https://github.com/GoldenAL1990/HDynPIN-Protocol/blob/main/HDynPIN-Protocol.apk

The HDynPIN app consists of two pages (Registration and Authentication). In the following, you can see the screenshots of these two pages. *Note that our experiments confirm the safety level of HDynPIN is three times higher than standard PIN scheme and outperform other state-of-the art protocols against active adversarial attacks inferring a victim device. According to our comparative results, the attack Resistance for HDynPIN (5/5), and for the Standard PIN scheme (2/5).

a) Authentication (or Sign-In)



b) Registration (or Sign-Up)



The difference between the HDynPIN and other existing PIN-based schemes is that user has to pick a hidden PIN (HP) and at least a set of three hint items and operators paired with each other that must be non-repetitive items which could be any symbols (words in different languages, emojis and so on). These settings help the user to enter a one-time valid dynamic combination (DPC) during the authentication. A user must take the following steps.

1) The identity information are chosen and requested to make sure that the user does not pick a part of her/his public available data that may lead to cracking the PIN based schemes by brought force attacks.
2) Email/Phone number: The HDynPIN also requires a user to set email address or a phone number for resetting the settings in case of forgetting the HP, which is used as a Username. Once it is verified, the user is allowed to find the DPC.
3) HP -> DPC: User has to set and memorize a HP (e.g., 3619) during the registration (sign up) that will be used to find the DPC according to a one-time valid hint item.
4) AI algorithm will generate a one-time valid hint item (e.g., 😘 =+1) and then the user can see it to remember the corresponding operator or tap on the hint item two times to see the corresponding operator. Hence, the DPC (e.g., 4720) can only be verified successfully once at the time.

* Note that all the list of HP options, hint items and operators can be defined by user during the registration phase and the AI only ensures that they are not repeated for at least three authentication processes.