

Markscheme

November 2025

Digital society

Higher level and standard level

Paper 2

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1. (a) Identify **one** input device of the One2Seven Smart Medicine Cabinet required for facial recognition. [1]

Answers may include:

- Camera
- 3D scanner

Award [1] for identifying one input device.

- (b) Identify **one** output device of the One2Seven Smart Medicine Cabinet. [1]

Answers may include:

- Mirror
- Screen

Award [1] for identifying one output device.

2. With reference to Source B, explain **two** reasons why it may be difficult to share data from the One2Seven Smart Medicine Cabinet with doctors at the hospital. [4]

Note to examiners: The response must be focused on difficulty of sharing

Answers may include:

- Poor Wi-Fi connection/insufficient bandwidth
- unable to transmit data

- Loss of power/issue with ISP/Reliability of servers/cloud servers
- Outage cause failure to update/cannot connect to share data

- Access/sharing credentials/security
- May forget password / firewall could block data sharing / authorization rules could change

- Insufficient storage space
- As unable to store data, unable to share

- Compatibility/interoperability
- Cabinets data send may be incompatible with hospital systems

- Authorization and Authentication
- Unable to Authenticate the use. - is this a valid use\Unable to set the rights (Authorize) the user

Award [1] for identifying a reason why it may be difficult to share data and [1] for development of that reason up to [2] marks.

Mark as [2] + [2].

3. Compare and contrast what Source C **and** Source D reveal about the privacy and security impacts for the data of a person using the One2Seven Smart Medicine Cabinet.

[6]

Answers may include:

*To meet the demands of the question, the response should focus on impacts (effects and outcomes) and implications (opportunities and risks) for **citizens**.*

Security

- **Hardware/Software:** Source C promotes the use of secure mobile app integration for ease of access. In **contrast**, Source D refers to the lack of compatibility and reliability between devices from different brands. This incompatibility may pose security risks (systems, values & ethics, reliability)
- **Encryption:** Source C promotes the advantages of the data getting a being collected ins encrypted. In **contrast**, Source D has concerns about the security of the data (unauthorized access), there is no mention of network security features (systems, values, ethics, data)
- **Network Security:** - Source C promotes secure connections when storing data. In **contrast**, Source D has concerns about the data being shared over home Wi-Fi connection (systems, values, ethics, networks)
- **Authentication/Access:** Source C mentions biometric security - users need to log on using facial recognition. This is safer than using a password. .Source D is concerned about unauthorized access but doesn't explain at what point this access might take place (systems, values & ethics)
- **Access:** Source C lists easy WiFi setup as a feature but Source D indicates some users are concerned about weak WiFi security in the home (systems, values & ethics)

Privacy

- Source C discusses sharing data with the pharmacy (reminder to take medicine). **Similarly**, Source D - discusses sharing health information with doctors and pharmacies i.e. alerts doctor and reminders and orders refills. Both see this as positive. (values, ethics, data)
- Source C data is sent to the cloud and can be shared with healthcare workers. **Similarly**, in Source D, smart home devices collect personal data, including medication schedules, online. Both sources do not address the privacy concerns of the data being shared. Both see this as positive. (values, ethics, networks, data, systems, space). Source C lists as a feature sharing data with pharmacies (reminders to take medication) and healthcare workers. In **contrast**, Source D has concerns about the data falling into the wrong hands and significant harm and damage can be done to people. (values, ethics, data, systems).
- Source C discusses the benefits of the camera collecting your personal data. In **contrast**, Source D has concerns about the camera recording more than your face. (values, ethics, reliability).
- Source C indicates that a lot of data is collected, shared and health advice is returned. Source D indicates that tracking health data from home is a positive feature. This raises questions about security (which isn't well addressed) and privacy concerns. (systems, values & ethics)

The following markbands should be used with responses to question 3.

Marks	Level Descriptor
0	The response does not reach a standard described by the descriptors below.
1–2	<p>Specific points relating to security or privacy about a person's data are identified.</p> <p><i>Note to examiners: Impact is a marked effect or influence</i></p> <p>The response:</p> <ul style="list-style-type: none"> • Lacks direct comparison or contrast to link the sources • The reference to the sources may be implicit. <p>For [1] mark, at least one specific point must be identified For [2] marks, at least two specific points must be identified</p>
3–4	<p>Security and privacy impacts are outlined or described. Where only one is addressed (security or privacy) maximum mark is [3]</p> <p>Comparisons AND/OR contrasts are linked to the impacts. (<i>Comparison/contrasts of sources may use words such as: whereas, however, while...</i>)</p> <p><i>EXAMPLE EXTRACT: Source C shows that the data is stored in the cloud using encryption, while Source D shows that the data is also stored in the cloud but too many people can access it.</i> Source C has no impact (marked effect or influence) and Source D has an impact which is the access</p> <p>The reference to the sources may be implicit.</p> <p>For [3] marks:</p> <ul style="list-style-type: none"> • Only privacy OR security are addressed • impacts are mostly outlined • limited attempt/s to compare and/or contrast sources. <p>For [4] marks:</p> <ul style="list-style-type: none"> • Both security AND privacy are addressed • impacts are mostly described • points/ideas drawn from Source C AND Source D.
5–6	<p>Security and privacy impacts are compared AND contrasted.</p> <p><i>EXAMPLE OF ONE IMPACT:</i> Source C shows that the data is stored in the cloud using encryption, which protects the data from unauthorized access. In contrast, Source D shows that too many people can access the stored data, which creates a privacy risk because sensitive information may be exposed.</p> <p>There are explicit references to the sources (Source C and Source D links/connects to description).</p> <p>For [5] marks</p> <ul style="list-style-type: none"> • Both security AND privacy impacts are addressed • Brief comparisons AND contrasts between Source C and Source D <p>For [6] marks</p> <ul style="list-style-type: none"> • Both security AND privacy impacts are addressed • Comparisons AND contrasts between Source C and Source D are developed in detail.

4. With reference to Sources A–D **and** your own knowledge, discuss the advantages **and** disadvantages of using the One2Seven Smart Medicine Cabinet to provide health advice.

[12]

Notes to examiners

1. Please use the Markband Guidance to determine which level descriptor a candidate's response fits. Note the progression for **critical thinking** from Band 4-6 to Band 7-9

Analysis = explaining why/how a point matters using sources or own knowledge, e.g.

Source A shows the cabinet gives immediate health scores, helping users save time by avoiding appointments and monitoring their health more regularly.

Synthesis = linking ideas across sources and/or own knowledge to show greater insight, e.g.

Source A gives users instant health scores, and Source C adds that it offers health advice. Taken together, this shows the cabinet turns quick measurements into practical guidance for users at home.

*Source A shows the cabinet gives instant health scores, and when considered alongside the **Apple Watch, which can sometimes misread heart rate during movement (own knowledge)** this suggests that relying on sensors may lead to inconsistent or misleading health advice.*

Evaluative comments = judging the significance of a point (how important it is, for whom, or under what conditions), e.g.

This is especially helpful for users who depend on quick updates to monitor their health each day;

This becomes a serious drawback when users rely on the device as their main source of health guidance.

2. Subject-specific terminology must be integrated into the response, not just added superficially or used in isolation.
3. Only accept security or privacy impacts about data if directly linked to health advice.

Underdeveloped: *Poor encryption is a disadvantage because someone might steal the user's data*

Acceptable: *Weak encryption means data could be intercepted, exposing a user's sensitive health information.*

Undeveloped: *Too many people can access the data, which is a disadvantage.*

Example linked to advice: *If users believe too many people can access the data, users may avoid sharing accurate information, which reduces the quality of the health advice the cabinet can provide.*

Answers may include:

Source A

- Tracks data – ADV so user can get health report. DISADV if not secure (systems, ethics, values)
- DISADV May not be reliable devices – poor sensors, camera (systems)
- DISADV if collection of data isn't accurate
- Inaccurate data collection due to lighting, room distractions (systems) DISADV
- Range of data collected ADV – provides health advice DISADV – not enough and wrong diagnosis

Source B

- Tracks/transmission/shares data – so user can get health report.(systems, ethics, values) ADV , DISADV risk, if information stored/transmitted is not secure
- Information is stored in the cloud (systems) DISADV if data is not encrypted
- ADV Data is shared with healthcare workers (ethics, values) to get diagnosis, medical help. DISADV if privacy issues e.g. computer not secured, non-designated workers can view data
- ADV Uses Wi-Fi to share data, may have connectivity issues (systems) if easily available DISADV if unreliable or security issues

Source C

- ADV Warns healthcare workers when health concerns (systems, health)
- Tracks data – ADV so user can get health report (systems, ethics, values, data) . DISADV if not secure
- Convenience - ADV offers a convenient way for patients to access health advice and vital information without needing to visit a healthcare professional or use separate devices. It integrates health monitoring seamlessly into daily routines. (systems, health)
- Realtime data - ADV provides real-time health metrics like blood pressure and stress levels. Patients can monitor their well-being regularly and take immediate action if necessary. (systems, ethics, values, data) DISADV range of data is not enough and could make incorrect advice.
- Risk Assessment/Informs patients offers risk assessments for conditions like liver disease and Type 2 diabetes, ADV which can help patients become more proactive about their health and potentially catch issues at an earlier, more treatable stage (systems, health) DISADV misdiagnosis
- Data Sharing -users can easily share their health data with doctors and healthcare workers, ADV enabling better communication and informed decision-making during medical appointments. (systems, ethics, values, data) for health outcomes DISADV if data not secure or non-designated people get access
- Cost - Ongoing costs of use of cabinet (e.g. Wi-Fi, wireless infrastructure, maintaining can be expensive, potentially limiting access to those who can afford the technology. (economic) DISADV cost to maintain ADV saves travel costs to visit specialists

Source D

- Warns you when health concerns (systems, health) ADV DISADV misdiagnosis
- Tracks data to see patterns (systems, ethics, values, data) ADV so user can get health report. DISADV if not secure/incorrect insight/insufficient data for trends/patterns
- Share with doctor information (systems, ethics, values) ADV easier than a visit to surgery, May find health problems that would otherwise be missed/ DISADV insufficient data to make diagnosis
- Highlights the privacy concerns associated with the device, raising patients' awareness about the potential risks and the importance of safeguarding their personal health data. (ethics, values, privacy) DISADV Being informed about the potential disadvantages and risks, patients may become more cautious and informed consumers of smart health technology, making them more likely to take appropriate measures to protect their privacy. (ethics, values, privacy) ADV DISADV if unauthorized access/misuse of information/this can create fear and mistrust around the use of such devices.
- May not be reliable - if information sent to healthcare workers is not accurate devices - poor sensors, cameras, lighting, insufficient collection (systems, reliability) DISADV misdiagnosis
- Software may not be up to date, providing inaccurate information (systems, reliability) DISADV – this could affect health outcomes/this can create fear and mistrust around the use of such devices
- Emphasizes the security risks associated with data falling into the wrong hands, DISADV potentially causing significant harm to patients. This can create fear and mistrust around the use of such devices. (ethics, values, security)
- Reliability of the health assessments made using Smart Mirror's technology may be a concern, DISADV as the technology may not always be as precise as traditional medical equipment. (systems, reliability, data)
- Relying heavily on technology for health advice may lead to reduced personal responsibility for one's health, DISADV as some patients might rely solely on the mirror's assessments instead of consulting healthcare professionals. (systems, data trust)
- It collects and stores sensitive health data, DISADV which may raise privacy concerns if the data is not adequately protected from unauthorized access or breaches. (systems, ethics, values, privacy)

Keywords: change, power, spaces, systems, values, ethics, data, networks, connections, data aggregation, analytics, smart, profiles, reliability, trust, privacy, anonymity, transparency, judgement

Marking notes:

It is not necessary to explicitly refer to each source to achieve the highest mark band. To achieve the highest marks the sources must be synthesized in an integrated manner rather than a systematic analysis of each individual source.

Please see the SL and HL Paper 2, Question 4 markband on Page 9.

The following markband should be used for responses to Question 4.

SL and HL Paper 2, question 4	
Marks	Level descriptor
0	<ul style="list-style-type: none"> The work does not reach a standard described by the descriptors below.
1–3	<ul style="list-style-type: none"> The response shows a limited understanding of the demands of the question. There is limited relevant knowledge. Evidence from sources is not integrated with the response. The response has limited organization.
4–6	<ul style="list-style-type: none"> The response shows some understanding of the demands of the question. Some knowledge is demonstrated but this is not always relevant or accurate. Evidence from sources is partially integrated into the response. The response is partially organized.
7–9	<ul style="list-style-type: none"> The response shows adequate understanding of the demands of the question. Relevant and accurate knowledge is demonstrated with some lapses. There is adequate integration of evidence from the sources, but this is not always sustained. The response is adequately organized.
10–12	<ul style="list-style-type: none"> The response is focused and shows an in-depth understanding of the demands of the question. Relevant and accurate knowledge is demonstrated throughout, adding insight to the response. There is consistent and effective integration of evidence from the sources. The response is well-structured and effectively organized.
