

### SAINTGITS COLLEGE OF APPLIED SCIENCES

VALUE ADDED COURSES 2020-21

# AN INTRODUCTION TO CYBER ATTACKS AND SECURITY



LEARN . GROW . EXCEL

#### ABOUT THE COURSE

An introduction to Cyber Attacks and Security enables the participants to understand the basic cyber security background. It also includes the history of Cybersecurity, its types and motives of various attacks.

#### OBJECTIVES

- The learner will understand key terms and concepts in cyber-attacks
- Understand the Cyber security and cyber law.
- Understand the principles of web security and understanding of security policies (such as confidentiality, integrity, and availability).



THE COURSE IS TO EQUP THE STUDENTS WITH LATEST TECHNOLOGY TRENDS IN CYBER ATTACK

### E XPECTED OUTCOMES

 Students will be able to understand the importance of cybersecurity and also get aware about the history and types of various cyber attacks.

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|---------|--|--|-----------------------------|---|
| 30 Hrs. |  |  |                             | 3 |
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|         | PRINCIPAL<br>Saintgits College of Appl<br>Kottukulam Hills, Pathan<br>Kottayam-686 534 | ed Scien <b>ces</b><br>- Jimm P. <b>O.</b><br>Ketala | MUTTOM, KOTTA               |   |
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### FEATURES

We provide practical sessions for this course



### RELEVANCE

This course is designed to equip the students with the latest cybersecurity features. also familiarize about various cyber attacks trending in the world.

#### ADVANTAGES

With cyber security measures implemented at home, you are well guarded against fraudulent transactions or data loss through malware etc. The following is a list advantages of cyber security for individuals: **Protection from identity theft, financial loss, customer data loss or impacts on business operations**.

#### CONTENTS

**Cyber Attacks:** - History, Definition and characteristics, Factors affecting cyber-attacks, Classification -Syntactic and semantic attacks, Other cyber-attacks - Financial Scams, Hacking, Copyrighted content, Pornographic content, Virus, Cyber stalking, Hate crimes, Outcomes of cyber-attacks- Fraud, extortion, Malware, Pharming, Phishing, Spamming, Spoofing, Spying, Denial of Service, Distributed denial of service, Theft of hardware, Messaging abuse, Infrastructures as targets - Control systems, Energy, Finance, Telecommunications, Transportation, Water, Hospitals

**Cyber Security:** - Definition, History, Fundamentals- The CIA Triad, Introduction to cyber space and cyber security, Cyber security challenges, Importance of cyber security, Security principles, Types of cyber security - Critical infrastructure security, Application security, Network security, Cloud security, Internet of things (IoT) security, Applications of cyber security

**Critical Analysis to cyber laws in India**: - Introduction, Beginning of cybercrime era, Cybercrime in India, Cybercrime and cyber security, Consequences, How legal system deals with cyber terrorists, Information technology amendment act 2008 (ITAA 2008) – History Definitions, Penalties, Compensation and Adjudication, Case study of Indian and International cyber-attacks.

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### LEARN GROW EXCEL





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## SAINTGITS COLLEGE OF APPLIED SCIENCES PATHAMUTTOM, KOTTAYAM

## COURSE NAME : An Introduction to Cyber Attacks and Security COURSE CODE:VCCAS012

**Course objective:** The learner will understand key terms and concepts in cyber-attacks, cyber security and cyber law. The learner will understand principles of web security and understanding of security policies (such as confidentiality, integrity, and availability).

Cyber Attacks: - History, Definition and characteristics, Factors affecting cyber-attacks, Classification -Syntactic and semantic attacks, Other cyber-attacks - Financial Scams, Hacking, Copyrighted content, Pornographic content, Virus, Cyber stalking, Hate crimes, Outcomes of cyber-attacks- Fraud, extortion, Malware, Pharming, Phishing, Spamming, Spoofing, Spying, Denial of Service, Distributed denial of service, Theft of hardware, Messaging abuse, Infrastructures as targets - Control systems, Energy, Finance, Telecommunications, Transportation, Water, Hospitals. (8 hours)

**Cyber Security**: - Definition, History, Fundamentals- The CIA Triad, Introduction to cyber space and cyber security, Cyber security challenges, Importance of cyber security, Security principles, Types of cyber security - Critical infrastructure security, Application security, Network security, Cloud security, Internet of things (IoT) security, Applications of cyber security. (10 hours)

Critical Analysis to cyber laws in India: - Introduction, Beginning of cybercrime era, Cybercrime in India, Cybercrime and cyber security, Consequences, How legal system deals with cyber terrorists, Information technology amendment act 2008 (ITAA 2008) – History Definitions, Penalties, Compensation and Adjudication, Case study of Indian and International cyber-attacks. (14 hours)

**Reference Books: -**

- Fundamentals of Cyber Security Bhushan/Rathore/Jamshed
  BPB Publications: First edition (2017)
- Information Security and Cyber Laws Gaurav Gupta, Sarika Gupta
  Khanna Publications: First edition (2019)

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|      |                         | Month | 1  | 7            | 7            | 7                        | 1           | 7            | 1.                  | 11.                  | 7.           | 1-           | 1 7                 | 1 8               | 8                   | 8                        | 8            | 8               | 0            | 8                         | 8                      | 8 8                 | 2           | 8                 |                          | 10   | 6             | 10                          | 10               | 0                        |        |     |       |      |     |
|------|-------------------------|-------|----|--------------|--------------|--------------------------|-------------|--------------|---------------------|----------------------|--------------|--------------|---------------------|-------------------|---------------------|--------------------------|--------------|-----------------|--------------|---------------------------|------------------------|---------------------|-------------|-------------------|--------------------------|--|---------------|-----------------------------|------------------|--------------------------|--------|-----|-------|------|-----|
| Roll | Name of Student         | Date  | 12 | 12           |              | 13                       |             |              | 17 1                | 1                    | 71           | 8 1          | -                   |                   |                     |                          |              |                 | 10           |                           | 11                     | 1 2                 | 5 2         | 6 24              | 1                        | 1  | 7             |                             | 8                |                          | 1      |     |       |      |     |
| No   |                         | Hour  | 4  | 6            | 5            | 6                        | -           |              |                     |                      | _            | 4 5          |                     | -                 | _                   | 5                        | 5            | 10              | 84           | 5                         |                        | 5 5                 |             | 5                 | 5                        | 5  | I             | 5                           | 4                | 5                        | 1      |     |       |      |     |
| 1    | ABHILASH MATHEW         |       | ×  | a            | 0            | x                        | x           |              | -                   |                      | -            | x            | × .                 | 1 0               |                     | X                        | x            | ×               | x            | x                         |                        | xb                  |             | X                 | X                        | X  | ×             | x                           | $\times$         | X                        | -      |     |       |      |     |
| 2    | ADITHYAN S              |       | 0  | a            | X            | X                        |             | ×            | ×                   | ×                    | a            | ×            | ,                   | $\langle \rangle$ | c ,                 | x x                      | X            | ×               | X            | ×                         | $\mathbf{x}$           | ××                  | ×           | X                 | X                        | x  | x             | x                           | ×                | ×                        |        |     |       |      |     |
| 3    | AJAI JOSE JACOB         |       | a  | x            | a            | ×                        | ×           | x            | $\times$            | <b>a</b> '           | x            | X            | $\mathbf{x}$        | xa                | ×                   | $\times$                 | ×            | ×               | $\mathbf{x}$ | ×                         | X                      | x                   | x >         | X                 | X                        | a  | ×             | $\times$                    | ×                | ×                        |        |     |       |      |     |
| 4    | AKSHARA RAJ             |       | x  | X            | X            | ×                        | a           | 9            | $\mathbf{x}$        | ×                    | ×            | $\mathbf{x}$ | $\times$ )          | $\mathbf{x}$      | ××                  | $\mathbf{x}$             | ×            | ×               | ×            | x                         | ×                      | ×                   | x >         | < ×               | ×                        | X  | ×             | X                           | X                | ×                        |        |     |       |      |     |
| 5    | ALAN PRASAD             |       | X  | X            | x            | X                        | X           | à            | ×                   | 9                    | ×            | ×            | x >                 | ۲ x               | ×                   | ×                        | ×            | ×               | ×            | $\boldsymbol{\mathbf{x}}$ | ×                      | × '                 | < 2         | < ×               | $\times$                 | $\times$   | a             | ×                           | ×                | *                        |        |     |       |      |     |
| 6    | ALEENA THOMAS           |       | X  | X            | x            | x                        | x           | X            | ×                   | 9                    | ×            | X            | ×                   | XX                | X                   | c x                      | ×            | X               | x            | $\times$                  | $\times$               | ×                   | × 3         | < >               | < >                      | $\langle \times \rangle$   | X             | X                           | ×                | ×                        |        |     |       |      |     |
| 7    | ALVIYA BABU K           |       | ×  | ×            | $\mathbf{x}$ | ×                        | ×           | X            | ×                   | ×                    | a            | ×            | x                   | × >               | $\langle x \rangle$ | $\langle \times \rangle$ | ×            | X               | ×            | $\mathbf{x}$              | $\boldsymbol{\lambda}$ | ×                   | <b>د ۲</b>  | ×                 | ×                        | ×  | ×             | $\left  \mathbf{x} \right $ | 9                | $\times$                 | _      |     |       |      |     |
| 8    | AMBADY SATHYAN          |       |    |              |              |                          |             |              |                     |                      | b            | anc          | elle                | d                 |                     |                          |              |                 |              |                           |                        |                     |             |                   |                          |  |               |                             |                  |                          | _      |     |       |      |     |
| 9    | ANJANA S                |       | X  | 2            | ×            | X                        | X           | X            | $\mathbf{x}$        | ×                    | a            | x            | x                   |                   | ××                  | : a                      | X            | X               | ×            | ×                         | X                      | <u>د م</u>          | c )         | r >               | $\langle \times \rangle$ | X  | ×             | x                           | ×                | ×                        | E.     |     |       |      |     |
| 10   | ANSA KURIAKOSE          |       | X  | $\mathbf{x}$ | a            | $\gamma$                 | X           | ×            | хl                  | χ                    | x            | ×            | x                   | $\mathbf{x}$      | x x                 | $d \times$               | $\mathbf{x}$ | ×               | X            | ×                         | <u> </u>               | X                   | $\times 2$  | $\langle \rangle$ | $ \times$                | 10   | X             | ×                           | X                | XB                       | -      |     |       |      |     |
| 11   | ANSU SUSAN BIJU         |       | x  | 0            | a            | X                        | ×           | $\times$     | ×                   | ×                    | ×            | ×            | $_{\times}$ >       |                   |                     | 2x                       | ×            | x               | ×            | ×                         |                        | -                   | <u>× </u> > | <u>×</u> اه       | -                        | -  | ×             | X                           | ×                | ~ )                      |        |     |       |      |     |
| 12   | ANSUMOL MATHEW          |       | x  | $\times$     | Х            | $\times$                 | a           | ×            | x                   | a                    | X            | a :          | × (                 | a >               | ×a                  | X                        | X            | x               | $\mathbf{x}$ | x                         | <u> </u>               | -+-                 | x (         | 2 2               | -                        |  | -             | ×                           |                  | ×                        | _      |     |       |      |     |
| 13   | AROMAL P SHAJI          |       | ×  | X            | a            | ×                        | x           | X            | X                   | x                    | $\times$     | ×            | x ?                 | x x               | <u> </u>            | <u>&lt;  ×</u>           | _            | $\mathbf{x}$    | X            | x                         | ×                      |                     |             | <u> </u>          | + -                      | x a  | X             | -                           | 入                | -                        | _      |     |       |      |     |
| 14   | AROMAL SEN              |       | X  | ×            | a            | ×                        | a           | ×            | ×                   | X                    | ×            | X            | _                   | X)                | r >                 | <u>x x</u>               | ·            | $\times$        | X            | $\times$                  | - T                    | - 1                 | -           | * )               | -                        |  | -             | ×                           |                  | $\frac{x}{x}$            | -      |     |       |      |     |
| 15   | ARYA S                  |       | X  | a            | ×            | a                        | ×           | ×            | ×                   | ×                    | ×            | $\times$     | -                   | $\times$          | _                   |                          | -            | -               | $\times$     | a                         | ~ +                    | <u> </u>            | × >         |                   |                          | $\langle \times$   | X             | -                           | ×                |                          | -      |     |       |      |     |
| 16   | ASHWIN PHILIP OOMMEN    |       | 3  | $\times$     | X            | X                        | $\varkappa$ | X            | x                   | $\times$             | x ľ          | хĻ           | a )                 | x x               | · / ~               |                          | X            |                 | ×            | ×                         | X                      | $ \rightarrow $     | $\sim$      | <u>&lt; &gt;</u>  | . 1 4                    | 4  | $4 \times$    | <u>.</u>                    | X                | X                        | -      |     |       |      |     |
| 17   | ASWIN A JACOB           |       | a  | ×            | X            | X                        | ×           | ×            | ľ                   | · · · · ·            | -            |              | X 12                | x x               | _                   |                          | -            | X               |              | X                         | $\times$               |                     |             | X                 | +                        | <a< td=""><td>X</td><td>-</td><td>X</td><td>Â,</td><td>-</td><td></td><td></td><td></td><td></td></a<> | X             | -                           | X                | Â,                       | -      |     |       |      |     |
| 18   | ASWIN BABU              |       | ×  | ×            | X            | X                        | a           | ×            |                     |                      |              |              |                     | <u>د ا</u> ک      |                     | _                        | ×            | X               | X            |                           |                        |                     | -           | 쏟?                | $\langle \rangle$        |  | -             | 1                           |                  | X                        | -      |     |       |      |     |
| 19   | BIBIN JOHN JACOB        |       | X  | x            | $\mathbf{x}$ | ×                        | X           | ++           | 1.                  |                      | $\times$     | X            | X                   | ××                |                     |                          | X            | X               |              | X                         |                        |                     | ×           |                   | < 0                      | -  |               | XX                          | X<br>×           | $\frac{\times}{\lambda}$ | -      |     |       |      |     |
| 20   | CHRIS SOSA JACOB        |       | X  | ×            | X            | $\times$                 | ×           |              |                     | _                    | <u> </u>     | ~            | _                   | ×                 |                     | _                        | _            |                 |              | ×                         |                        |                     |             |                   | ×                        |  |               |                             | -                |                          | -      |     |       |      |     |
| 21   | CHRISTY BABY THOMAS     |       | X  | $\mathbf{x}$ | x            | x                        | X           | ×            | $\boldsymbol{\chi}$ | ×                    | $\times$     | X            | <u>× </u> 2         | <u>`</u>          | rx                  |                          |              |                 |              |                           | X                      | -                   | -           | ~                 | X                        |  | ××            | $\frac{1}{x}$               | X                | X                        | -      |     |       |      |     |
| 22   | DONAL BABU              |       | x  | $\sim$       | X            | x                        | ×           | $\mathbf{x}$ | ×                   |                      | <u> </u>     |              |                     |                   | ××                  | -                        | _            | Ň               | X            |                           | ×                      | $\times \downarrow$ | - 4         | X X               | <u></u>                  | XX   | +~            | +                           | X                | X                        | -      |     |       |      |     |
| 23   | FLAVYA SHAIBY           |       | X  | X            | ×            | X                        | X           | x            | x                   |                      |              |              | ×                   |                   | x >                 | -                        |              | X               | ×            | -                         | X                      |                     |             |                   | -+-                      |  | ×             | $\propto$                   | x                |                          | -      |     |       |      |     |
| 24   | GAUTHAM KRISHNA M       |       | ×  | $\mathbf{x}$ | X            | $\langle \times \rangle$ | ×           | X            | X                   |                      |              | _            | ×α                  |                   | <u> </u>            |                          |              |                 | 00           |                           | - ~ 1                  | 뚰                   |             | -+-               | <b>(</b>                 |  | -             | X                           | a                | X                        | -      |     |       |      |     |
| 25   | GOUTHAM RAJ             |       | X  | ×            | X            | a                        | X           | $\sim$       | ×                   | ×                    | ×            | ×            | $\times $           | X Z               | ×                   | 2                        | -            | <del>رر</del> ، |              | -                         | メ                      | ^                   | 0           | $(\mathbf{x})$    | 4                        |  | en            | +                           |                  | -                        | $\neg$ |     |       |      |     |
| 26   | GREVIN SAM THOMAS       |       | X  | $\mathbf{x}$ | $\times$     | X                        | X           | $\mathbf{x}$ | <u> </u>            | <u>~</u>             | $\mathbf{x}$ | -            | ×,                  | x   z             |                     |                          | -            | -               | -            |                           |                        | X                   |             | XP                |                          |  | $\frac{x}{a}$ |                             |                  | X                        | $\neg$ |     |       |      |     |
| 27   | JACINTA JOJI ANCHANATTU |       | X  | ×            | X            | ×                        | x           | $\mathbf{X}$ | $\times$            | <u> </u>             | <u>`</u>     | /            | ΧŻ                  |                   | $\langle \rangle$   |                          | _            | X               | X            |                           | $\times$               | x                   |             |                   | × )                      |  | 4             | X                           | X                | ×                        | 1      |     | EOFA  | 2    |     |
| 28   | JIJO VARGHESE           |       | X  | ×            | X            | x                        | x           | x            | $\times$            | $\times$             | X.           |              | $\frac{\chi}{\chi}$ | -12               | 0 X                 | 0 X                      |              | x               | -            | 10                        | ×                      |                     |             | х×                |                          |  |               | -                           |                  | x                        | 13     | 1   |       | Nº6  |     |
| 29   | JISHNU P. S             |       | ×  | ×            | x            |                          | X           | a            | a                   | X                    |              | · \          |                     |                   | 0 2                 | 2 ×                      |              | 1.              | X            | 10                        | X                      |                     | a           | 4                 |                          | XX   |               | -                           | x                | 3                        | and a  | 1   | D     | Sac  | 5   |
| 30   | JITHIN SEBASTIAN        |       | ×  | ×            | X            | X                        |             | $\times$     | ×                   | $\boldsymbol{x}_{i}$ | X            | X            | ×                   | X                 | 0 2                 | ¥ )                      | s X          | X               | 9            | ×                         | X                      | $\mathbf{X}$        | Χ           | SI/               |                          | VC.  |               | 14                          | 11               |                          | 3      |     |       |      | :// |
|      |                         |       |    |              |              |                          |             |              |                     |                      |              |              |                     |                   |                     |                          |              |                 |              |                           |                        |                     |             |                   |                          |  |               |                             | $\left( \right)$ | 2                        | (2)    | 144 | POM.K | TINK | 4   |

| Roll |                       | Month | 1              | 1            | 7            | .7           | 7            | 7   | 7                | 7        | 1            | 1                | 7                | 7            | 8                | 8            | 8                     | F            | 8              | 8            |                  | 8                      |                        | 5              | 8            | 8            | 9            |                |                     |                         | 0 1        | D   |
|------|-----------------------|-------|----------------|--------------|--------------|--------------|--------------|-----|------------------|----------|--------------|------------------|------------------|--------------|------------------|--------------|-----------------------|--------------|----------------|--------------|------------------|------------------------|------------------------|----------------|--------------|--------------|--------------|----------------|---------------------|-------------------------|------------|---|
|      | Name of Student       | Date  | 12             | 12           | 13           | 13           | 14           | 14  | 17               | 71       | 11           | 18               | 18               | 20           | 11               | 18           | lg !                  | 21           | 24             | 10           | 0                | u                      | 1                      | $\mathcal{U}$  | 26           | 26           | 17           |                | 2                   | 78                      | - 8        |   |
| No   |                       | Hour  | 4              | 6            | 5            | 6            | 5            | 6   | 4                | <        | 6            | 6                | 5                | 5            | 5                | 5            | 5                     | 5            | 5              | 4 3          | -                | ৸                      | 8                      | 5              | 2            | 5            | 5            | 5              | 4 :                 | 5 1                     | 43         | 5   |
| 31   | JOEL SALVIN           |       | X              | X            | x            | $\infty$     | $\mathbf{x}$ | x   | x                | X        | $\mathbf{x}$ | X                | Y                | x            | x                | X            | x                     | X            | x              | X            | x                | X                      | $\mathbf{x}$           | X              | X            | Хľ           | X            | Xľ             | ~ ~ ~ ~             |                         | x >        | < 🐹   |
| 32   | KEVIN CHACKO          |       | X              | x            | x            | x            | X            | x   | ×                | 8        | X            | a                | a                | ×            | ×                | X            | ×                     | X            | ×              | $\mathbf{x}$ | X                |                        | ×                      | X              | X            | X            | X            | $\times$       | X                   |                         | xx         | ×   |
| 33   | LAKSHMI CHANDANA      |       | X              | X            | x            | X            | x            | X   | 7                | ~        | x            | ×                | X                | ×            | X                | $\propto$    | ×                     | ×            | X              | $\mathbf{x}$ | ×                | X                      | ×                      | x              | $\times$     | $\times$     | $\mathbf{X}$ | $\times$       |                     | -                       | $x \times$ |   |
| 34   | LAKSHMI PRASAD        |       | X              | X            | CA           | X            | $\times$     | 0   | x                | v        | $\times$     | ٩                | ×                | x            | $\boldsymbol{x}$ | $\times$     | $\times$              | $\mathbf{x}$ | $\propto$      | a            | a                | x                      | $\times$               | ×              | ×            | $\times$     | $\times$     | $\times$       | X                   |                         | $\times$   |   |
| 35   | LIYA K MATHEW         |       | X              | ۵            | $\mathbf{x}$ | ×            | a            | à   | ò                | x        | X            | X                | x                | X            | ×                | ×            | $\times$              | a            | $\times$       | ×            | X                | $\mathbf{X}$           | ×                      | $\times$       | $\times$     | $\times$     | $\times$     | $\times$       | ×                   |                         | $\times$   |   |
| 36   | LIYO LUKO SAM         |       | $\mathbf{x}$   | Х            | ×            | Х            | X            | x   | X                | Х        | $\times$     | x                | a                | ·X           | X                | x            | X                     | ×            | x              | X            | X                | $\mathbf{x}$           | x                      | $\mathbf{x}$   | X            | $\sim$       | $\mathbf{x}$ | $\times$       | X                   | x >                     | 2          | <u>c</u>  |
| 37   | LYDIA SOLOMON         |       | X              |              | x            | x            | $\mathbf{x}$ | X   | X                | X        | X            | ×                | ۵                | Х            | X                | X            | $\mathbf{x}$          | $\mathbf{x}$ | x              | X            | x                | $\times$               | λ                      | ~              | x            | X            | 9            | - <b>x</b> +   |                     | $\times$                | X          |   |
| 38   | MEERA SALIM           |       | x              | X            | a            | X            | ×            | X   | x                | X        | X            | x                | X                | x            | Х                | $\mathbf{x}$ | ×                     | a            | Х              | ×            | X                | $\times$               |                        |                | ×            | X            | $\times$     | $\times$       | $\prec$             | $ X\rangle$             | ~          | ×   |
| 39   | MITHUN M              |       | x              | X            | X            | X            | ×            | ×   | $\times$         | ጾ        | x            | $\mathbf{x}$     | $\mathbf{x}$     | Ł            | γ                | χ            | $\boldsymbol{x}$      | X            | $\mathbf{x}$   | 0            | ×                | X                      | x                      | X              | X            | $\mathbf{x}$ | $\times$     | $\sim$         | X                   | XD                      | X />       | <u>&lt;                                    </u> |
| 40   | NIVYA NIDHIKUMAR      |       | x              | X            | ×            | CL           | <u>مر</u>    | a   | x                | X        | x            | x                | X                | ×            | X                | x            | $\boldsymbol{\times}$ | $\times$     | a              | 9            | ×                | -                      | $\times$               | $\times$       | X            | X            | $\times$     | X              | X.                  | X                       | ~          | $\times$  |
| 41   | PARVATHY TU           |       | x              | X            | X            | X            | 9            | χ   | ĸ                | X        | X            | x                | x                | X            | $\infty$         | x            | X                     | $\mathbf{x}$ | X              | X            | X                |                        | $\mathbf{X}$           | X              | Х            | X            | X            | $\times$       | $\times$            |                         |            | x   |
| 42   | RAHUL RAJ M.A         |       | X              | X            | X            | X            | a            | ×   | ×                | ×        | Children     | x                | x                | ×            | Х                | x            | $\boldsymbol{\times}$ | $\times$     | $\succ$        | a            | $\times$         | x                      | $\times$               | $\times$       | $\mathbf{x}$ | $\times$     | a            | $\mathbf{x}$   | X                   | X                       | 7          | $\left  \right\rangle$                          |
| 43   | RAHUL SURESH          |       |                |              |              |              |              | в   | an               | le       | llea         | d                |                  | - Jula       |                  |              |                       |              |                |              |                  |                        |                        |                |              |              |              |                |                     |                         |            |   |
| 44   | RAKHI KRISHNAN        |       | $\sim$         | X            | X            | X            | $\sim$       | a   | X                | X        | Х            | X                | x                |              |                  |              | ×                     |              | $\mathbf{x}$   | X            | X                | $\times$               | X                      | 9              | $\times$     | a            | Х            | $\times$       | X                   | $\times p$              | ХĻ         | <u>×</u>  |
| 45   | ROBIN ROY             |       | $ \mathbf{x} $ | $\mathbf{x}$ | $\mathbf{x}$ | x            | X            | à   | ×                | X        | X            | a                | ۵                | X            | X                | X            | ۵                     | X            | X              | $\mathbf{x}$ | 9                | X                      |                        | ×              | ۵            | $\sim$       | $\times$     | X              | a                   | $\times$                | $\times$   | 7   |
| 46   | ROHAN JACOB GEORGE    |       | ×              | ×            | X            | $\sim$       | X            | X   | X                | X        | x            | $\boldsymbol{x}$ | X                | x            | X                | $\mathbf{x}$ | X                     | $\sim$       | $\mathbf{x}$   | X            | x                | X                      | X                      | X              | X            | X            | $\sim$       | X              | X                   |                         | $\times$   | × –   |
| 47   | ROOBEN CHANDY JACOB   |       | ×              | X            | X            | $\propto$    | a            | X   | X                | X        | X            |                  | X                | ×            | ×                | x            | X                     | $\times$     | X              | X            | X                | X                      | ×                      | ×              | a            | $ \chi $     | X            | $\times$       | X                   | ×                       |            | ×   |
| 48   | SANJU ABRAHAM VARUGHE | SE    | $\mathbf{x}$   | X            | $\times$     | ×            | $\times$     | X   | a                | ×        | $\times$     | $\times$         | $\mathbf{X}$     | a            | x                | ٩            | $\mathbf{x}$          | $\mathbf{X}$ | X              | a            | $\boldsymbol{x}$ | a                      | $\mathbf{x}$           | X              | X            | $\times$     | X            | $\times$       | Х                   | XP                      | X          | $\lambda$                                       |
| 49   | SAVANTH SAJI          |       |                |              |              |              | k            | Sau | neo              | lle      | d_           |                  |                  |              |                  |              |                       |              |                |              |                  |                        |                        |                |              |              |              | 0.0            |                     |                         |            |   |
| 50   | SEBASTIAN JOSE        |       | $\sim$         | $\sim$       | X            | $\mathbf{x}$ | $\mathbf{x}$ | X   | $\mathbf{x}$     | $\times$ | $\mathbf{x}$ | $\mathbf{x}$     | $\boldsymbol{x}$ | ×            | $\times$         | $\times$     | $\mathbf{x}$          | $\times$     | ×              | ~ ~          | X                | X                      | $\mathcal{X}$          | $\times$       | -            | X            | $\propto$    | X              | χ                   | $ \chi $                | - 1 10     | $\times$  |
| 51   | SHARON JAMES          |       | ×              | X            | X            | x            | X            | x   | $\checkmark$     | X        | a            | x                | $\mathbf{x}$     | $\mathbf{x}$ | x                | x            | $\mathbf{x}$          | X            | $\sim$         | X            | X                | $\sim$                 | ×                      | a              | X            | x            | X            | 9              | a                   | 1 1                     |            | ×–  |
| 52   | SHERIN P MATHEW       |       | $\sim$         | $\propto$    | X            | X            | X            | X   | $\boldsymbol{x}$ | X        | X            | ٥                | $\mathbf{x}$     | X            | ${}^{\times}$    | $\sim$       | $\propto$             | $\propto$    | $\mathbf{x}$   | $\mathbf{x}$ | $\times$         | $\mathbf{x}$           | ×                      | $\times$       | 0            | X            | <u> </u>     | X              | $\boldsymbol{\chi}$ | X                       |            | $\times \downarrow$                             |
| 53   | SHERIN S JACOB        |       | G              | X            | X            | a            | 9            | Q   | X                | ×        | ×            | ×                | X                | $\times$     | X                | ×            | ×                     | X            | $\propto$      | a            | X                | $\times$               | $\succ$                | $ \mathbf{x} $ | $ \gamma $   |              | X            | X              | X                   | $ \times $              | -          | X   |
| 54   | SHON J. MATHEW        |       | $\sim$         | $\mathbf{x}$ | X            | Х            | X            | X   | Û                | X        |              | x                | x                | 9            | X                | x            | $\sim$                | $\times$     | $ \times$      | x            | $\mathbf{x}$     | X                      | a                      | $ \mathbf{x} $ | x            | 1            | X            | X              | X                   | ++                      | X          | X   |
|      | SINI THOMAS           |       | Ń              | X            | X            | X            | X            | x   | ×                | a        | x            | X                | ×                | a            | X                | x            | $\sim$                | a            | $ \mathbf{x} $ | a            | X                | $\left  \right\rangle$ | $\boldsymbol{\lambda}$ | a              | X            |              | X            | X              | CI                  | X                       | X          | $\times$  |
| 56   | THOMAS KUTTY          |       | X              | X            | X            | X            | X            | X   | χ                | X        | $\mathbf{x}$ | X                | x                | x            | X                | x            | ×                     | x            | X              | X            | X                | ×                      | $\mathbf{X}$           | X              | X            |              | X            | $\cdot \times$ | x                   | x                       | X          | $\mathcal{X}$                                   |
| 57   | SNEHA SARA SANTHOSH   |       | X              | X            | x            | Q            | 9            | X   | x                | X        | X            | X                | ×                | X            | $\mathbf{x}$     | x            | ×                     | ×            | 9              | ×            | X                | X                      | X                      | x              | X            | ×            | X            | X              | $\mathbf{x}$        | X                       | X          | X   |
| 58   | SREELAKSHMI S         |       | X              | X            | x            | X            | X            | X   | x                | ×        | X            | X                | x                | ۹            | $\mathbf{x}$     | ×            | ×                     | x            | X              | $\times$     | X                |                        | X                      | X              | $\times$     | +            | X            | ×              | X                   | $\left  \times \right $ | ×          | X   |
| 59   | SWETHAMOL V S         |       | 2              | X            | X            | x            | 01           | ×   | X                | ×        | X            | ×                | Q.               | X            | X                | X            | $\mathbf{x}$          | $\mathbf{x}$ | $\mathbf{x}$   | X            | x                |                        | X                      | X              | _            | X            | + ~ ~        | X              | X                   | X                       | ×          | X   |
| 60   | TIJO GEORGE THOMAS    |       | X              | X            | x            | X            | X            | a   | X                | X        | x            | X                | X                | x            | X                | ×            |                       | X            |                | $\sim$       | x                |                        | X                      | X              | X            | $\times$     | X            | X              | X                   | 14 4                    |            | X   |
|      | VIGNESH G             |       | X              | X            | X            | X            |              | X   | x                | ×        | a            | X                | X                | X            | · · ·            |              | X                     | 20           | 2              | x            | x                | X                      | X                      | X              | X            | X            | X            | X              | X.                  | X                       | x          | ×   |
| 62   | ZIYAD NAZEER          |       | X              |              | ×            | X            | X            | X   | ×                | X        | ×            | X                | x                | ×            | X                | 9            | X                     | ) 9          | C,             | X            | X                | X                      | X                      | $\rightarrow$  | $4 \times$   | X            | 4            | $\lambda$      | X                   | X                       | X          | R.  |
|      |                       |       |                |              |              |              |              |     |                  |          |              |                  |                  |              |                  |              |                       |              |                |              |                  |                        |                        |                |              |              |              |                | 1                   | 100                     | П          |   |